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INDEX

Pulp and Paper Magazine of Canada

Vol. XIV. Year 1916

NOTE.—The following table will show the numbers of the pages found in each issue, listed according to date and number.—

Date.	Number.	Pages.
January 1	1	1-24
January 15	2	25-48
February 1	3	49-72
February 15	4	73-96
March 1	5	97-120
March 15	6	121-146
April 1	7	147-170
April 15	8	171-194
May 1	9	195-218
May 15	10	219-240
June 1	11	241-264
June 15	12	265-286
July 1	13	287-308
July 15	14	311-334
August 1	15	333-356
August 15	16	357a-280a
September 1	17	281a-302a
September 15	18	301a-322a
October 1	19	323a-344a
October 15	20	345a-366a
November 1	21	343b-370b
November 15	22	373-394
December 1	23	397-424
December 15	24	429-456

Letters a and b are used in index only to show numbers repeated during the year.

INDEX OF AUTHORS.

	Page
Acres, H. G.—The Water Powers of the Province of Ontario	285a
Ailing, Joseph, T.—The Human Element in Business	304
Bert, Henry—The Location, Organization and Economic Operation of the Modern Box Board Mill	320
Bert, Henry—Purchasing the Equipment for the Boiler Room	342
Bert, Henry—Practical Operation of the Modern Boiler Room	350b
Beveridge, James—Sulphite Pulp from Poplar	30
Beveridge, James—The Manufacture of Paper from Straw	225
Beveridge, James—The Distribution of Water on the Paper Machine	269
Black, Robson—Forest Conservation in Canada	160
Black, Robson—The Truth About Ontario's Fire Protection System	297a
Black, Robson—The Northern Ontario Fire	344a
Bowness, A. O.—Important Points in the Manufacture of Ground Wood	107
Brand, Charles J. and Merrill, Jason L.—Zacation as a Paper Making Material	11
Brown, Hon. W. R.—Cutting Down the Waste in the Forest Crop	62
Bryant, O. F.—Pulpwood Measurement and Some Factors Involved in Chipping and Baling Pulpwood	431
Campbell, R. H.—Honored	351
Campbell, R. H.—Increased Production and Forest Management	36
Campbell, R. H.—On Preparedness	61
Conway, G. R. G.—The Water Powers of British Columbia	336
Crane, Arthur M.—The Mechanical Filtration of Water	203
Dearden, James R.—Some Aspects of the Color Tie-up	7
De Carteret, S. Lawrence—Fighting Forest Fires by Co-operation	62
De Cew, J. A.—Some Chemical and Physical Reactions of Rosin Size Solutions	348a
Dickson, G. W.—Some Variable Conditions Affecting the Manufacture of Ground Wood	83
Ebbinghaus, P.—The Paper Pulp of the Future	323
Fernald, H. T.—Pine Blister Rust	65
Fernow, Dr.—Silvicultural Problems of Forest Reserves	58

Hedalen, John—Utilization of Sulphite Waste Liquor	176
Hirsell, M.—Some Words About Acid Making for the Sulphite Pulp Process	380
Jolly, R. W.—Big Era of Progress Represented by Chemical Exposition	327a
Jolly, Rowland W.—Importance of Accounting in Pulp and Paper Mills	340-263a
Jolly, R. W.—Progress of the Investigation of the Newsprint Industry	344
Jolly, Rowland W.—Sweden's Embargo on Chemical Pulp	67
Kaelin, F. T.—Water Powers of Quebec Province	329a
Lawler, Jas.—The Forests Prime Evil, (Poem)	104
Leavitt, Clyde—Report of the Committee on Forests, Commission of Conservation	54
Lovejoy, P. S.—Guesses About Pulpwood—Supply of Future	353a
Low, E. R.—The Value of the New Welland Ship Canal to the Canadian Pulp and Paper Industry	200
Maddox, Harry A.—The Characteristics of Fibres, Part II.	8
Maddox, Harry A.—The Characteristics of Wood Fibres, Part III.	438
Mansfield, Everett & Stephenson, J. N.—The Effect of Certain Chemicals on the Time of Beating	325a
McKee, Ralph H.—Proper Reforestation	106
McNaughton, G. C. & J. H. Thickens—Ground Wood Pulp	230, 271, 289
Merrill, Jason L. and Brand, Charles J.—Zacation as a Paper Making Material	11
Muntzing, A.—The Business Concerning Rags and Paper Refuse	348
Plumstead, Jos. E.—Ash Tests & Their Significance	31
Pounsford, A. G.—Safety First	79
Pounsford, A. G.—The Necessity of Starting a Safety First Campaign	268
Stephenson, J. N. & Mansfield, E. K.—The Effects of Certain Chemicals on the Time of Beating	325a
Sutermeister, E.—The Efficiency of the Wet Machine as a Washing Device	283a
Sweezy, R. O.—The Conservation of Our Forest Resources	179
Sweezy, R. O.—Undeveloped Resources of the Upper Ottawa Region	266a
Thelan, R. & Winslow, C. P.—Suggestions as to Purchase of Pulpwood	352a
Thickens, J. H. & G. C. McNaughton—Ground Wood Pulp	230, 271, 289
Webb, Bertram S.—Trade Openings in Argentina	324
Wilson, Ellwood—Fire Protection from the Private Timber Owner's Viewpoint	63
Wilson, Ellwood—Forestry in Connection with Pulp Mill Operation	403
Wilson, Ellwood—Planting Forests for Profit	32
Winslow, C. P. & Thelan, R.—Suggestions as to Purchase of Pulpwood	352a
Young, Cyril T.—Consumers Must Pay Higher for Canadian Supplies	345

INDEX OF SUBJECTS.

	Page.
Abitibi Land and Forest Company's Bonds	321
Abitibi Making New Records	232
Abitibi Paper Annual	45
Abitibi Plant Safe	346
Abitibi Pulp and Paper Co.	90
Abitibi to be Listed	444

Accounting in Pulp and Paper Mills, Importance of—by Rowland W. Jolly	340, 263a
Accounting, Uniform System of	394
Aeroplanes Over Forests	89
Afforestation	349a
Afforestation and Returned Soldiers (Editorial)	344b
After-the-War Problems (Editorial)	323a
Aiding American Tourists	270a
Alcohol from Waste Liquor, To Manufacture	209
American Bag and Paper Co.	345
American Capital for Canadian Industries	385
American Dyestuff Industry, The	365
American Writing Paper	17
Americans Invade Canada	365
American Newspaper Publishers Appoint McIntyre	350
American Newspaper Publishers Elect Officers	209
American Printing and Publishing Industry	311a
American Pulp and Paper Association Convention	99
American View, An	362
Among the Trees	441
Amphibian, The Great	310a
Analysis, Proposed Standard Methods of	303a
Anglo-Newfoundland Development Company, Ltd.	44
Angus, William—Obituary	224
Another Side to "More Production"	454
Arbour Day (Editorial)	361a
Argument, and Unanswerable	448
Aroostook Pulp Co.	448
Argentina, Trade Openings in—By Bertram S. Webb	324
Argentina's Paper Imports	272a
Argentine, Imports of Pulp into	16
Argentina Market for Newspaper	90
Ash Tests and Their Significance, The Value of—Jos. E. Plumstead	31
Australia Needs Lumber	17
Bags, Manufacture of Wood-Pulp	418
Bamboo, Paper From	363a
Bark for Paper Specialties, the Use of—by Otto Kress	333a
Bark of a Tree, to Use the	383
Barker Attachments, the Wilkinson	292a
Barking and the Loss of Wood	328
Barking Drum, a New	114
Bates & Innes to Open Montreal Office	440
Bathurst Lumber Company Operating	48
Beating Engine, A New Type of	337a
Beating, The Effect of Certain Chemicals on the Time of—by Everett K. Mansfield and J. Newell Stephenson	325a
Beaver Board Companies Create New Subsidiary	430
Belts from Paper Yarns	361a
Berthierville Nurseries	279a
Big Business	332a
Blister Rust, White Pine	332
Blue Books, To Reduce Output of	74
Boiler Room, Practical Operation of—by Henry Bert	350b
Boiler Room, Purchasing the Equipment for the—by Henry Bert	342
Bond Interest to be Paid	302a
Book Prices Advance in New York	418
Book Review—Canadian Industry, Commerce & Finance	280
Book Review—Cost Accounting	286
Book Review—"The Lumber Industry"	209
Books, The Making of	325
Box Board, Mill, The Location, Organization & Economic Operation of the Modern—by Henry Bert	320
Boy Scout Forest Book	98
British Columbia Possibility of Pulp Mill	13
British Columbia Pulp Co. New	302a
British Columbia, The Water Powers of—by G. R. G. Conway	336
British Embargo	87
British Imports Further Restricted	454
British Importations of Pulp	300

British Paper and Pulp Imports ..	159
British Paper and Pulp Trade ..	282
British Newspapers and the Paper Shortage ..	112
British Paper Imports, Limiting ..	102
British Trade After the War ..	157
Broadaxe Battalion (Editorial) ..	172
Broker's Comment, A ..	350
Brompton Paper to be Listed ..	444
Brompton Pulp and Paper Company Reorganizes ..	375
Bryant Paper Co. Coming to Canada ..	352a
Build in New Ontario, To ..	94
Bureau of Standards, Work of the ..	357
Business Getting ..	
Californian Forestry Journal ..	390
Calculator, A Handy ..	120
Cameron Slitting and Rewinding Principle ..	280
Campbell Going Overseas, Former Editor ..	232
Canada Box Board Company Organize ..	186
Canada Paper Company Pays Back Dividend ..	343
Canada Paper to Enlarge ..	292a
Canada, To Visit ..	360
Canada, To Be World's Center ..	416
Canada's Chemical Pulp ..	321
Canada's Paper Exports (Editorial) ..	258a
Canada's Export of Forest Products ..	343a
Canada's Newsprint Production ..	300
Canada's Paper Exports ..	381
Canada's Paper Exports ..	440
Canada's Pulp and Paper Exports ..	290a
Canada's Pulp and Paper Exports ..	416
Canada's Pulp and Paper Industry ..	242
Canada's Timber Wealth ..	265a
Canadian Industry, Commerce and Finance—Book Review ..	280
Canadian Paper and Pulp ..	383
Canadian Paper Wanted ..	228
Canadian Press Association ..	277
Canadian Paper Trade, Review of ..	87, 110
Canadian Pulp and Paper Association, Annual Meeting of ..	53, 75
Canadian Pulp Mills, List of Active ..	249
Canadian Pulp, Consuming ..	363b
Canadian Pulpwood Consumption in 1915 ..	243
Canadian Pulp for France ..	381
Canadian Situation ..	387
Canadian Woods only for Canadian Pacific Railways ..	69
Canadian Woods, to use Only ..	188
Canadian Woodpulp ..	333
Careful Development (Editorial) ..	343b
Cedars of Lebanon ..	35
Cellulose from Wood, the Yield of ..	277
Cement Acid Towers ..	232
Characteristics of Wood Fibres, the —by Harry A. Maddox ..	438
Cheap Paper Hurts Publishers (Editorial) ..	373
Chemical Exposition ..	347a
Chemical Exposition, Big Era of Progress Represented by R. W. Jolly ..	327a
Chemicals, Increased Cost of ..	258a
Chemical Killing of Weeds ..	45
Chemical Meeting in New York (Editorial) ..	301a
Chemists and Technical Men to Meet in New York ..	269a
Chemists vs. Nature (Editorial) ..	73
Chemists to Discuss Papers ..	313a
China Clay Industry, Cornish ..	92
China Clay, Treatment for Discolored ..	249
Christmas Tree Trade ..	15, 429
Cigarettes for Russia ..	302
Clay, American, in Paper Making ..	286
Clearing House, A. (Editorial) ..	288
Coated, Why Paper is ..	157
Cody, Maurice J., Dead ..	302
Colonial Pulp & Paper Co. New ..	365b
Color Tie-up, Some Aspects of—by James R. Dearden ..	7
Committee, Advisory, to Forest Products Laboratories ..	402
Committee on Literature and Statistics, Report of ..	316
Committee on Standards, Report of ..	315
Committee on Technical Education, Report of ..	314
Conservation, Forest, in Canada—by Robson Black ..	160
Conservation, The Meaning of (Editorial) ..	25
Consumers Must Pay Higher for Canadian Supplies—by Cyril T. Young ..	345
Consul Willrich Makes a Report ..	281a
Contract, Standard Form of ..	311a
Convention, The Recent (Editorial) ..	398
Convention, To Hold ..	109
Convention Week in New York ..	91
Co-operative Insurance for Lumbermen ..	16
Cork Forests ..	187
Correction ..	115, 212
Cost Accounting—Book Review ..	286
Cost Accounting, Wrapping Paper Men to Consider ..	227

Cost of Paper-making Increased (Editorial) ..	98
C. P. & P. A. Executive Meets in Toronto ..	266
Creosote Imports ..	304
Creosoted Lumber for Farmers ..	258a
Creosote Plant, to Build ..	304
Creosoted Wood Blocks, the use of, for Sidewalks ..	328a
Cuba, Paper Importation in ..	351
Daniels' (U. S. Secretary) Paper Burns ..	10
De Cew Gets Patent ..	13
Diamond Match Co. ..	232
Digest of the Paper, Chemical and Mechanical Pulp Markets of the World ..	357b
Directory, Lockwood's ..	356a
Doctor, Chain your ..	272a
Donnacona Paper Co. Expands ..	450
Donnacona, Want to Buy ..	362
Dryden Timber and Power Co. ..	268a
Dyes and Eye Fatigue ..	364
Dyes, Cheaper ..	362
Dyes from Orange Wood ..	361b
Dye Problems ..	2, 98, 112
Dyestuffs, Worth Just as Much Here ..	39
Eastern Rates Case, the (Editorial) ..	311
Eddy Company, Buyers After ..	442
Editor of Pulp and Paper Magazine, the New ..	347a
Editorial—A Business Getting Tour ..	282a
A Clearing House ..	288
A Government Operated Mill ..	302
A Municipal Rag-Man ..	195
A Worried Journal ..	282a
After-the-War Problems ..	323a
Aid Our Returned Soldiers ..	241
Annual Meeting of Technical Section ..	241
Afforestation and Returned Soldiers ..	344b
Arbour Day ..	172
Canada's Paper Exports ..	258a
Canadian Research Bureau ..	220
Careful Development ..	343b
Cheap Paper Hurts Publishers ..	373
Evidences of Prosperity ..	429
Consul Willrich Makes a Report ..	281a
Cost of Paper Making Increased ..	98
Doing it Up "Brown" ..	320a
Export Trade Problem ..	98
Fourdrinier Wires ..	195
Forest Fires ..	257a
German Peace Proposals ..	430
Increased Demand for Newsprint ..	196
Industry Expanding ..	97
Making Bricks Without Straw ..	398
National Enrollment ..	220
Nearing the Maximum Output ..	219
Newspapers May Cost More ..	196
Newspapers Must Increase Selling Price ..	334
Organize for an Export Trade ..	148
Paper Export Possibilities ..	281a
Paper Makers' Problems ..	287
Paper Men Bereaved ..	287
Paper Prices ..	397
Paper Prices to Advance ..	334
Penny Wise—Pound Foolish ..	324a
Pre-Revolutionary Forestry ..	288
Prices Tending Upwards ..	344b
Providing for the Future ..	397
Pulp and Paper Magazine Opens New Department ..	333
Pulp and Paper Magazine to be a Weekly ..	345a
Rags ..	147
Safety Work ..	266
Saving the Settler from Cropland ..	266
"Save Your Rags and Waste Papers" ..	172
Significant Developments ..	333
Soldiers' Pensions ..	171
Strengthening the Bonds ..	97
Substitutes for Wood Pulp ..	258a
"The Broad Axe Battalion" ..	172
The Chemical Meeting in New York ..	301a
The Christmas Tree Trade ..	429
The Destroyed Forests of Europe ..	288
The Demand for Newsprint ..	288
The Eastern Rates Case ..	311
The Export Field ..	301a
The Gathering in New York ..	346a
The Niagara Meeting ..	265
The Movies in Business ..	312
The Price of Paper ..	265, 345a
The Pulp Wood Situation ..	257a
The Recent Convention ..	398
The Sulphite Situation ..	324a
The Utilization of Waste in Lumbering ..	220
Technical Trained Workmen ..	147
Toothpicks to Cost More ..	374
United States Pulp and Paper Industry ..	219
What Impressed Li Hung Chang ..	397
Wood Alcohol to Replace Gasoline ..	345b
Education, Technical, Report of Committee on ..	314
Education, Vocational in Pulp and Paper Mill Towns—By T. Linsey Crossley ..	299

Edwards, W. C. Lumber Co. Capital Increased ..	115
Egypt, Paper Making in ..	269a
Ellis, John F., on Insurance Board ..	90
Embargoed Bagging and Rope, England Has ..	258
England Repulping Paper ..	316a
England's Timber Imports ..	272a
European Institutions in Pulp and Paper Manufacture, Some Notes on, by Oliver Rolland ..	405
Evidence of Prosperity ..	429
Export Field, the (Editorial) ..	301a
Export of Forest Products, Canada's ..	343a
Export Trade Problems (Editorial) ..	98
Export Trade, Organize for an (Editorial) ..	148
Exports of Pulp and Paper, Our ..	315a
Export Trade, To Develop ..	356b
Exports, Our Pulp and Paper ..	360, 362
Exports of Newsprint Paper ..	345b
Famine, the Print ..	347
Fears Canadian Competition ..	184
Federal Trade Commission and the Newsprint Manufacturers ..	251
Felts, The Foes of ..	267a
Fibres, The Characteristics of—by H. A. Maddox ..	8
Fighting Forest Fires by Co-operation—by S. Lawrence DeCarteret ..	62
Fillers, Use of Mineral, on High Speed News Machine—by Snowshoe ..	303
Fire at Plant of Martin Corrugated Paper Box Co. ..	16
Fire Losses in Northern Ontario ..	442
Fire Losses, To Lessen (Editorial) ..	74
Fire Protection from the Private Timber Owner's Viewpoint—by Ellwood Wilson ..	63
Fire, The Northern Ontario—by Robson Black ..	344a
Fire Warnings on Game Tags ..	45
Fires, How Japan Fights ..	15
Fireproof Paper ..	346a
Foam Effects Caused by Mechanical Pulp ..	285
Fords at the Front, Four ..	6
Forest Areas, English ..	332
Forest Book, Boy Scout ..	98
Forest Conservation in Canada—by Robson Black ..	160
Forest Crop, Cutting Down the Waste in the—by W. R. Brown ..	62
Forest Economy, Quebec's ..	357
Forest Fires and Paper Prices ..	360b
Forest Fires' Cost to Canada in 1916 ..	416
Forest Fires, Fighting by Co-operation—by S. L. de Carteret ..	62
Forest Fire Hazards ..	184
Forest Fires in the United States, Fewer ..	206
Forest Fires, Keeping a Tight Rein on ..	337a
Forest Fires, Law Suit Over ..	24
Forest Fires (Editorial) ..	257a
Forest Fires, To Reduce ..	115
Forest Management, Increased Production and—by R. H. Campbell ..	36
Forest Nurseries ..	15
Forest Products, Our Exports of ..	344
Forest Product Laboratory, Changes at ..	354a
Forest Protection for N. B., Better ..	388
Forest Protection in Canada ..	163
Forest Protection, Waste in ..	159
Forest Protection System, Recommend that Ontario Recognize ..	263
Forest Resources, Conservation of our—by R. C. Sweezy ..	179
Forest Resources, Silvicultural Problems of—by Dr. Fernow ..	58
Forests, Safeguarding our (Editorial) ..	1
Forest, Saving Damage to the ..	275a
Forestry and Conservation Conventions ..	54
Forestry in Connection with Pulp Mill Operations—by Ellwood Wilson ..	403
Forestry, Journal, Californian ..	390
Forestry, Municipal ..	355
Forestry, Pre-Revolutionary (Editorial) ..	288
Forestry Problem, Ontario's ..	115
Forestry, Provincial Reports (Editorial) ..	50
Forestry Stories for School Children ..	45
Forests and Moisture ..	17
Forests, Commission of Conservation, Report of the Committee on —by Clyde Leavitt ..	54
Forests for Profit, Planting—By Ellwood Wilson ..	32
Forests, Japs Conserve ..	15
Forests of Europe, The Destroyed (Editorial) ..	288
Forests Prime-Evil, (The Poem)—by Jas. Lawler ..	194
Forgers Reproduced Watermark ..	45
Fourdrinier, Charles, Dead ..	1
Fourdrinier Wires (Editorial) ..	195
France, Paper Industry in ..	321
France Bars Newsprint ..	442

Freight Congestion Will Affect the Industry, Fear—by R. W. Jolly	440	Maximum Output, Nearing the (Editorial)	219	Paper from Seaweed	41
Freight Rates Advanced on Pulp	311a	McIntyre, A. G., American Newspaper Publishers Appoint	350a	Paper from Sugar Cane	13
German Match Industry, the	20	McIntyre, A. G., Resigns at Manager at Bathurst	66	Paper, Great Britain's Sources of	160
German Peace Proposals (Editorial)	430	Mead New Head Spanish River	50, 94	Paper (Historical)	188
Government Operated Mill, A (Editorial)	302a	Meetings to Attend	33	Paper Imports, British Limiting	102
Government Ownership	35	Mills, Three Idle	356	Paper Imports, New Zealand	381
Government Paper Mill	315a	Mistletoe A Forest Pest	273a	Paper Industry in France	321
Government's Paper Bill, the	354a	Mobilizing their Resources (Editorial)	25	Paper Industry of the U. S.	275a
Great Britain's Sources of Paper	160	Money, a New Use For	323	Paper, Is Coated, Why	157
Great Northern Paper Co.	11	Monteith Pulp & Timber Co.	69	Paper is Dearer, Why	351a
Ground Wood. Important Points in the Manufacture of—by A. O. Bowness	107	Movies in Business, the (Editorial)	312	Paper Making in Egypt	269a
Ground Wood Pulp—by J. H. Thickens and G. C. McNaughton	230, 271, 289	Municipal Rag Man, A (Editorial)	195	Paper Making Materials, New (Editorial)	26
Ground Wood, Some Variable Conditions Affecting the Manufacture of—by G. W. Dickson	83	National Enrollment (Editorial)	220	Paper Making Materials	45
Gummed Papers Extending	319	Nature vs. Chemists (Editorial)	73	Paper Market, A Runaway	332
Ha Ha, Baie Sulphite Mill	277	New Department, Pulp and Paper Magazine Opens (Editorial)	333	Paper Men Before Royal Commission	356b
Harmsworth Mill Fire	90	New York, the Gathering in (Editorial)	346a	Paper Men Wait on Premier	16
Helin Director of Wayagamack	332	New Zealand, Demand for Print Paper in	120	Paper, New Ways of Making	349b
Hinde & Dauch Paper Co., Annual Meeting	87	New Zealand Paper Imports	381	Paper Packing Twine	120
Honour Roll, the, 3, 27, 51, 149, 173, 197, 221, 253, 259a, 346b, 374, 376.	14	New Zealand, Paper Shortage Serious in	357	Paper Prices Advance in Norway	15
Hops, Paper From—Note	296a	Newfoundland, New Mills for	24	Paper Prices (Editorial)	397
Houpt Paper Company	296a	Newfoundland Notes	44, 252	Paper Prices Rise While Costs Decline	391
Human Element in Business, The—by Joseph T. Alling	304	Newfoundland's Paper Exports	454	Paper Prices to Advance (Editorial)	334
Imports of Paper in Cuba	351	Newfoundland Paper Mills	992	Paper, Printing, Required in Siberia	96b
Imports of Paper and Pulp into Great Britain	214	News for 1917, Predict Shortage of—by R. W. Jolly	415	Paper Pulp from Straw, the Manufacture of—by James Beveridge	225
Imports of Pulp into Argentina	16	New Industry, Investigations of, Progressing	257	Paper Pulp of the Future, the—by P. Ebbinghaus	323
India, Pulp & Paper in	181	Newspaper Costs	347	Paper Shirts for Soldiers	15
India, the Paper Trade in	280	Newspapers, Daily, in U. S.	363b	Paper Shortage, British Newspapers and the	112
Industrial Research To-day	152	Newspaper May Cost More (Editorial)	196	Paper Shortage Serious in New Zealand	357
Industry, An Expanding	322	Newspaper Men Protest Freight Increase	69	Paper Stocks, Appreciation in	369b
Industry Expanding (Editorial)	97	Newspapers Must Increase Selling Price (Editorial)	334	Paper Stocks, Market Values of	350a
Industry, Our Biggest	15	Newspaper Output	332	Paper Supply, the	296a
Ink, Colored, Scarce	120	Newspaper Situation, the	323	Paper Suspensions	441
Insurance of Standing Timber Regarded as Feasible	355	Newspaper, the Demand for (Editorial)	288	Paper, Sweden's Production and Export of	354
International Land and Luber Co.	300	Newsprint, Demand for, in New Zealand	120	Paper Textile Industry, Review of	103
International Land and Lumber Co.	96b	Newsprint, Efforts Being Made to Reduce Consumption	252	Paper Trade, Japan's	39
International Paper	227, 359b, 365	Newsprint Industry, Progress of the Investigation of—by R. W. Jolly	344	Paper Trade Journal Editor Dead	302
International Paper Increased Dividends	362	Newsprint Investigation	383	Paper Trade Prospects—by E. E. Biggar	37
International Paper Company Warns Customers	271a	Newsprint Inquiry, Trade Board Begins the	268a	Paper Trade—Russian	41
International Sets Price at \$62	412	Newsprint Manufacturers, Federal Trade Commission and the	251	Paper Trade Within Empire	89
Interprovincial Issue	16	Newsprint Manufacturers Protest	239	Paper, Waterproof, and its Manufacture	158
Japan—How Japan Fights Fires	15	Newsprint Production and Shipment Report	248	Paper, Waxine	360b
Japan, Wood Pulp in	120	Newsprint Production Output at New High Record	298	Paper Yams, Belts from	361b
Japanese Industry, War Booms	448	Newsprint Shortage, The	350, 441	Papers, Tissue, from Hot Mechanical Pulp	267
Japanese Inquiry for Bleached Sulphite Pulp	14	Newsprint Situation, The	229, 270a, 443	Papers, to Decrease Size of	275a
Japanese Paper Making Town	16	Newsprint Situation in 1915—by G. F. Steele	77	Papers, To Reduce Sunday	365b
Japanese Paper Mills Busy	311a	Niagara Gathering of the Technical Section	265, 267	Partington Company to Expand	16
Japanese Pulp Industry	89	Niagara Meeting, the (Editorial)	265	Partington Mill Sold	448
Japan's Paper Trade	39	North American Paper Co.	351b, 412	Press, the Power of	331
Japs Conserve Forests	15	Norway, A Lookout Has Been Declared in	258	Press Felts, the Proper Treatment of	161
Jeffrey Mfg. Co.'s Western Office	280	Norwegian Pulp and Paper Market	300	Press, What the—Can Do	325
Journalist Bates Turns Salesman	430	Notes and Queries	292a	Past, An Echo of the	325
Kenogami Mill Makes Progress	250	Old Papers, Makes New	385	Pencils, World's Lead	43
Kraft, The Demand for	184	Ontario Paper Company's Roof Trusses Collapse	360	Penny Wise—Pound Foolish (Editorial)	324a
Labrador, Sulphite Plant for	284a	Ontario Paper Company Expanding	69	Peruvian Match Industry	120
Lace Paper, To Make	271a	Ontario, Recommend that, Reorganize Forest Protection System	263	Photo Paper, Whiting Makes	120
Lake St. John, To Build Mill on	300	Ontario, The Water Powers of—by H. G. Acres	285a	Pine Blister Pest—by Dr. H. T. Fernald	65
Land, A Substitute for	120	Ontario's Forestry Problem	115	Planting Cut over Limits	412
Laurentide Company's Report	317a	Ontario's Forest Protection System. The Truth About—by Robson Black	297a	Planting on Highways	424
Laurentide Men at the Front	343	Ontario's Forest System, To Reorganize	416	Poplar, Sulphite Pulp from—by James Beveridge	30
Laurentide Power Co.	321, 362	Ottawa Notes 13, 38, 66, 92, 163, 212, 253	441	Port Arthur, New Pulp Mill at	387
Law Suit Over Forest Fires	24	Ottawa Paper Combine	441	Port Arthur, Paper Mill for	344a
Lefebvre Process, The New	443	Ottawa Region, The Upper, Undeveloped Resources of—by R. O. Sweezy	266a	Potash, Sources of	188
Li Hung Chang, What Impressed (Editorial)	397	Paper and Pulp, Canadian	383	Power Plants	334
Lest We Forget	374	Paper and Pulp Markets of the World, Digest of	413	Preparedness—by R. H. Campbell	61
Literature and Statistics, Report of Committee on	316	Paper and Pulp Technology Courses at the University of Maine	390	Price Bros. Adding New Machine	442
Logwood Supplies for Canada	120	Paper Beds, Germans Use	232	Price Brothers Declare Dividend	296a
Loaders, Self-Propelling Wagon and Truck	286	Paper Clothes	255a	Price Bros. Report	214
London Times, The Growth of	14	Paper Exports, Canada's	381	Price of Paper Must Increase	350
Loving Cups, Heads of Firm Get	109	Paper Exports	45	Price of Paper, the (Editorial)	265, 345a
Lumber and its Uses	454	Paper Exports, Newfoundland's	454	Price Tending Upwards (Editorial)	344b
Lumber Company in Liquidation	24	Paper Exports Possibilities (Editorial)	281a	Process, The New Lefebvre	443
"Lumber Industry, The," Book Review	209	Paper Famine in Europe	321	Production and Shipment	359b
Lumbering—The Utilization in (Editorial)	220	Paper Famine, The	284a	Productive and Shipment Report for July	295a
Lumberman's Advertising Campaign	441	Papers for Paper Makers	296	Prosperity, the Limit of	386
Lumbermen Going Overseas	351	Paper in Foreign Countries, Scarcity of	356	Providing for the Future (Editorial)	397
Lumbermen, To Aid	16	Paper from Bamboo	363b	Provincial Forestry Reports (Editorial)	50
MacKinnon Holmes Supplies Wayagamack	332			Provincial Mills to Extend	272a
MacLaren, The Late David	184			Provincial Paper Company's New Office	14
Mail Order Houses Retrench	450			Provincial Paper Securities to List	444
Making Bricks Without Straw	398			Publishers Confer on Paper Shortage	218
Manitoba, New Paper Bill for	271a			Publishers Greed is Aggravating the Situation—by R. W. Jolly	355b
Maritime Provinces, Water Power of	352b			Publishers Hope to Keep Mills Working on Newsprint	448
Markets	21, 46, 71, 96, 117, 143			Publishers to Make Paper	355
Markets 166, 191, 215, 236, 259, 283, 305				Publishers to Testify	350
Markets, Resume of During Past Year	34			Publishing Costs	388
Martin Corrugated Paper Box Co. Fire at Plant of	16			Pulp and Paper Association (Editorial)	50, 73
Massachusetts, Planting Trees in	184			Pulp and Paper Exports, Canada's	416
Match Industry, the Peruvian	120			Pulp and Paper in India	181
Mattagami Company Changes Hands	284a, 310a			Pulp and Paper Magazine to be a Weekly (Editorial)	345a
				Pulp and Paper Magazine	398

Pulp and Paper News—15, 17, 19, 42, 45, 89, 95, 102, 113, 164, 189, 213, 235, 255, 278, 301, 326, 352, 274a, 282a, 291a, 312a, 339a, 361, 362b, 384, 419, 445, 446	
Pulp and Paper Project Allowed to Lapse Pro Tem	12
Pulp, British Importation of	300
Pulp, Canada's Chemical	321
Pulp, Canadian, for France	381
Pulp, Canadian Wood	333
Pulp, Ground Wood—by J. H. Thickens and G. C. McNaughton,	230, 271, 289
Pulp, Hot Mechanical, and Tissue Papers From	267
Pulp Imports, U. S.	386
Pulp Mills, List of Active Canadian	249
Pulp, Regulations Re Wet	360
Pulp, U. S. Imports of	318a
Pulp Wood, A Big Order	214
Pulp Wood Consumption in 1915, Canadian	243
Pulpwood Measurements and Some Factors Involved in Chipping and Baling Pulpwood—by O. F. Bryant	431
Pulpwood, Price of	351
Pulpwood Shortage in Northern Ontario	340a
Pulpwood Situation (Editorial)	257a
Pulpwood Situation, The Northern Ontario	289a
Pulpwood, Suggestions as to Purchase of—by C. P. Winslow and R. Thelan	352a
Pulpwood Supply of Future, Guesses About—by P. S. Lovejoy	353a
Pulpwood to be Higher	284a
Purchasing the Equipment for the Boiler Room—by Henry Bert	342
Pusey & Jones Company Reorganization	344a
Quebec Leads, Where	360
Quebec Province, Water Powers of—by F. T. Kaelin	329a
Quebec Settlers Obey New Permit Laws	275a
Question Bureau	284a
Question Drawer	447
Rag Market, A Break Reported in the	180
Rags (Editorial)	147
Rags, Absolutely No, To Come from England	227
Rags and Paper Refuse, The Business Concerning—by A. Muntzing	348
Rags and Waste Papers, The Serious Condition in the Supplies of	155
Reforestation, Proper—by Ralph H. McKee	106
Reid, De Wolf, Returns	256
Reindeer, Canadian	351
Reindeer Versus Goats (Editorial)	2
Remington Mill Changes Hands	385
Report, A Valuable	360
Report of Committee on Literature and Statistics	400
Report of the Committee on Standards	401
Report of Committee on Technical Education	400
Researching Paper	336a
Research Bureau, Canadian (Editorial)	220
Research, Course in Chemical	394
Research To-day, Industrial	152
Resolutions, Committee of Forests, 1916, Commission of Conservation	65
Return Privileges	296a
Riordon Paper Listed	262a
Riordon Pulp and Paper Co.	95
Riordon Pulp and Paper Co.	170
Riordon Pulp and Paper Pays Dividend	350
Riordon Purchases Ticonderoga	412
Riordon's New Bleaching Plant	418
Riordon's New Bleached Sulphite Mill	385
Roll Width Information, the A. N. P. A. Wants	450
Romance of Modern Industry, A.	366
Rope of Crepe Paper	209
Rosin Size Solutions, Some Chemical and Physical Resolutions of—by J. A. De Cew	348a
Roof Trusses Collapse at Ontario Paper Company	360
Russia, Cigarettes for	302
Russian Paper Trade	41
Russia's Forest Areas	280
Safety First—by A. G. Pounsford	79
Safety First Campaign, The Necessity of Starting—by A. G. Pounsford	268
Safety Work (Editorial)	266
Safety Work, Results of	109
Save Your Rags and Waste Papers (Editorial)	172
Saving the Settler from Cropless Lands (Editorial)	266
Saving to Nation Since 1910, \$14,000,000	437

Sawdust, New Use for	280
Sawdust, Making, Work	270
Seaweed, Paper From	41
Second Only to Steel	387
Secures Contract	109
Settler, Would the Ontario—Object?	275a
Shingles that Will Not Burn	360
Shoes Like "The Wonderful One Horse Shay"	357
Siberia Printing Paper Required	96b
Significant Developments (Editorial)	333
Silk from Sawdust	279a
Silvicultural Problems of Forests Reserves—by D. Fernow	58
Sisal Grass, To Widen Use of	322
Slate, Restoring the	275a
Smith, Howard, Cleans up Deferred Dividends	430
Smith, Howard, Employees' Outing	316a
Smith, Howard, Paper Expands	379
Smith, Howard, Purchases Crabtree	361b
Snowshoe—Use of Mineral Filters on High Speed News Machine	303a
Soldiers, Aid our Returned (Editorial)	241
Soldiers' Pensions (Editorial)	171
Southern Lumberman Editor Resigns	323
Southern Pine as a Source of Supply for Paper	202
Sowing Forest Tree Seeds	232
Spain in 1914, The Paper Market in	154
Spain, the Paper Industry of	266a
Spanish River Adding New Grinders	266a
Spanish River Company's Statement	318a
Spanish River Preferred Certificate Plans	442
Spirit of the Convention—Editor	49
Standard Form of Contract	311a
Standard Methods of Analysis, Proposed	307a
Standardize Fine Papers, Movement to	207
Standards, Report of Committee on	315
Stationers and the War	48
Staunton, Thos. A., Death of	14
Steele Takes a Rest	442
St. Maurice Paper Co.	263, 361b
Stores and Paper Famine	444
Straw, Manufacture of Paper From	250
Straw, The Manufacture of Paper Pulp From—by J. Beveridge	225
Strengthening the Bonds (Editorial)	97
Strike at Warren Mill	337a, 365
Sugar Cane, Paper From	13
Sulphite Plant for Labrador	284a
Sulphite Pulp from Poplar—by James Beveridge	30
Sulphite Pulp Process, Some Words About Acid Making for The—by M. Hirsell	380
Sulphite Situation, The (Editorial)	324a
Sulphite Waste Liquor, Utilization of—by John Hedalen	176
Sulphite, What is it?	344a
Sulphur Burners, Vesuvius	230
Supply and Demand Law Controls Paper Prices	356a
Swedens' Embargo on Chemical Pulp—Its Effect on the United States—by Rowland W. Jolly	67
Swedens' Production and Export of Paper	354a
Swedish Embargo	49, 69
Swedish Paper Mills Running at Top Speed	271a
Swedish Situation (Editor)	74
Tasmania, Wood Pulp Industry of	17
Tax, The British Match	211
Technical Section, Annual Meeting of	84 and 241
Technical Section Holds Gathering	313
Technical Section Meeting, February 10th	53
Technical Section Meeting November 24th and 25th	347a, 345b, 399
Technical Section—The Niagara Gathering	267
Technical Section to meet at Niagara	242
Technical Trained Workmen (Editorial)	147
Telephones, Forestry Branch and	388
Testing and Sampling Wood Pulp	10
Textiles From Wood Pulp	109
Thickens, J. H., New Manager at Bathurst	66
Thompson, H. W., Joins Pulp and Paper	411
Thorold, New Sulphite Mill at	96b
Timber, How Long Will Our—Last?	361b
Timber Tests, Laurentide	160
Timber Wealth, Canada's	265a
Toronto as a Printing Centre	456
Toronto Paper Co. Increases Dividend	383
Towers, Acid, of Cement	232
Toy Industry, Canadian	340a
Trade Enquiries	353a
Trees for Prairie Farmers	45
Tree Growing Failure	43
Trees, How Birds Plant	114

Turbines, An Order For	328a
Turner Bros. Enlarging Plant	316a
Twine, Paper Packing	120
Uncle Sam to Turn Paper Maker	322a
Uniform System of Accounting	394
Union Bag & Paper Co.	16, 184, 224, 366, 372a
U. S. Capital for Canada	239
United States Envelope	232
U. S. Exports	442
U. S. Government Largest Paper Buyer	234
U. S. Government Paper Bills	273a
U. S. Imports of Pulp	318a, 386
U. S. Newsprint Bill \$45,000,000 More	437
United States Notes	18, 40, 70, 93, 166, 182, 185, 210, 233, 254, 281, 303, 327, 349, 273a, 293a, 314a, 338a, 358, 364b, 389, 417, 449
United States Paper Industry	366
United States Pulp and Paper Industry (Editorial)	219
U. S. Sawmills, 48,000	120
Walden's A. B. C. Guide	284a
War the Great School Teacher	424
Warning, An Unheeded	370b
Waste From Saw Mills, To Use	436
Waste Not Want Not	184
Waste Papers, The Serious Condition in the Supplies of Rags and	155
Waste Sulphite Liquor, Utilization of	344a
Water Powers of Canada, Province of British Columbia—by G. R. G. Conway	336
Water on the Paper Machine, Distribution of—by James Beveridge	269
Water, The Mechanical Filtration of—by Arthur M. Crane	203
Water Powers of Ontario, The—by H. G. Acres	285a
Water Powers of Quebec Province—by F. T. Kaelin	329a
Water Power of the Maritime Provinces	352b
Water Proofing vs. Moisture Proofing	16
Watermark, Forgers Reproduced	45
Watermark, Saved by a	340a
Waterproof Paper and its Manufacture	158
Waxine Paper	360b
Wayagamack, Helin, Director of	332
Wayagamack, Not After	323
Wayagamack Not Building New Mill	300
Wayagamack Places Machinery Order	332
Wayagamack Pulp and Paper Co. Annual Report of	91
Weeds, Chemical Killing of	45
Welland Ship Canal, The Value of the New, to the Canadian Pulp and Paper Industry—by E. R. Law	200
Weldon, I. H.—A Sketch	436
Wet Machine as a Washing Device, The Efficiency of—by E. Sutermeister	283a
Why Paper is Dearer, and What the Manufacturer is up Against today—by G. B. Van Blaricom	231
White Pine Blister, The	375
White Pine in Danger	444
Whiting Makes Photo Paper	120
Wiener Joins Abitibi Company	271a
Wilkinson Barker Attachments, the	292a
Wilson, Re-election of Pres. is an Incentive to Extend Canadian Industry—by R. W. Jolly	382
Wire Committee, Canadian, Confers With Body in New York	257
Wire Rope, Protect your—When not in use	362
Wisconsin Makes 1,600 lbs. of Paper per Family	14
Wood Fibres, the Characteristics of—by Harry A. Maddox	438
Wood Preserver, A New	211
Wood Alcohol, A Future for	445
Wood Alcohol to Replace Gasoline (Editorial)	345b
Wood Block Pavements, Creosoted	112
Wood Block Pavements, Creosoted, (Editorial)	26
Wood Distillation Industry	356
Woods for Paper, Eleven New	442
Wood, Fuel Value of	445
Wood, Tremendous Waste of	454
Worried Journal, A (Editorial)	282a
Wood Pulp and Wood Pulp Board of Sweden	41
Wood Pulp vs. Cotton	115
Wood Pulp in Japan	120
Wood Pulp Industry of Tasmania	17
Wood Pulp, Textiles form	109
Wooden Shoes, Making	45
Woodlot, the Farm	356b
Workmen's Compensation Board, Facts from the Report of	208
World's Lead Pencils	43
Wrapping Paper Men to Consider Cost Accounting	227
Zacation as a Paper Making Material—by Chas. J. Brand and Jason S. Merrill	11

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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51



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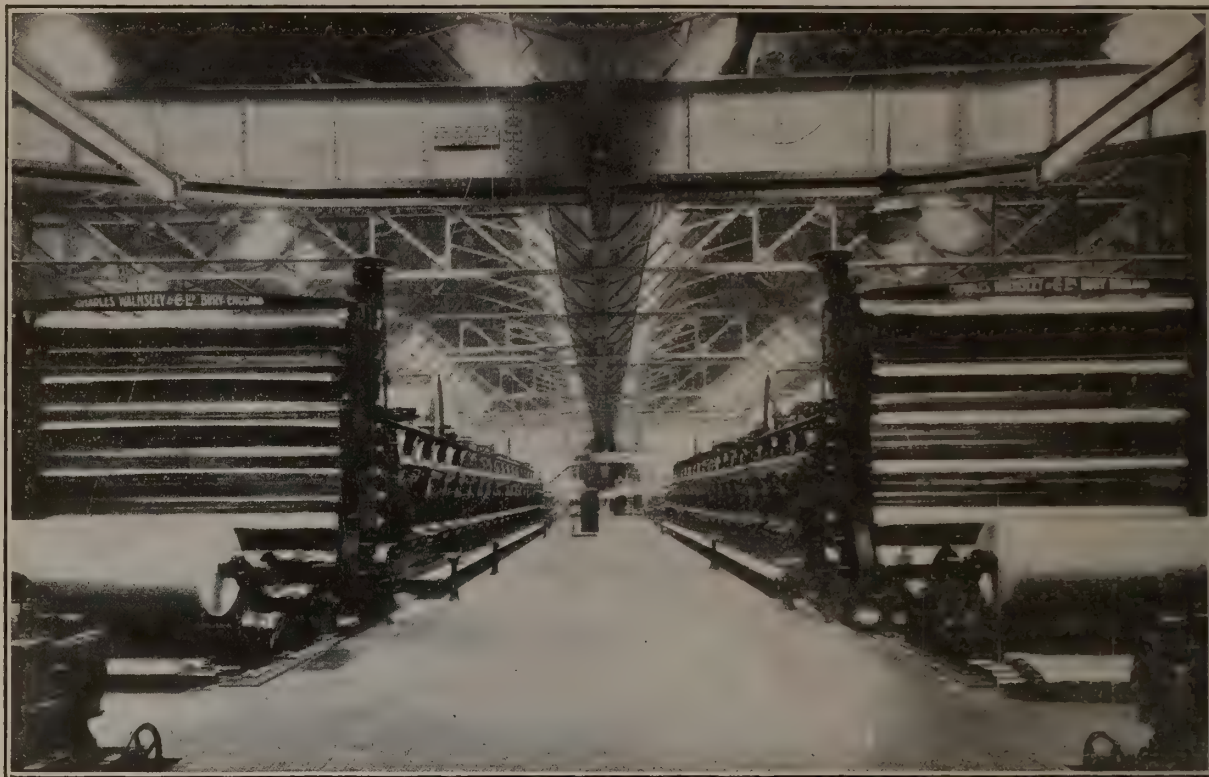
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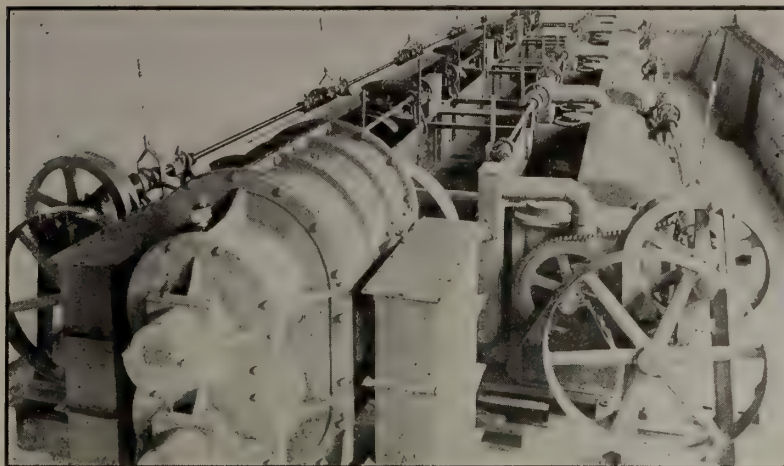
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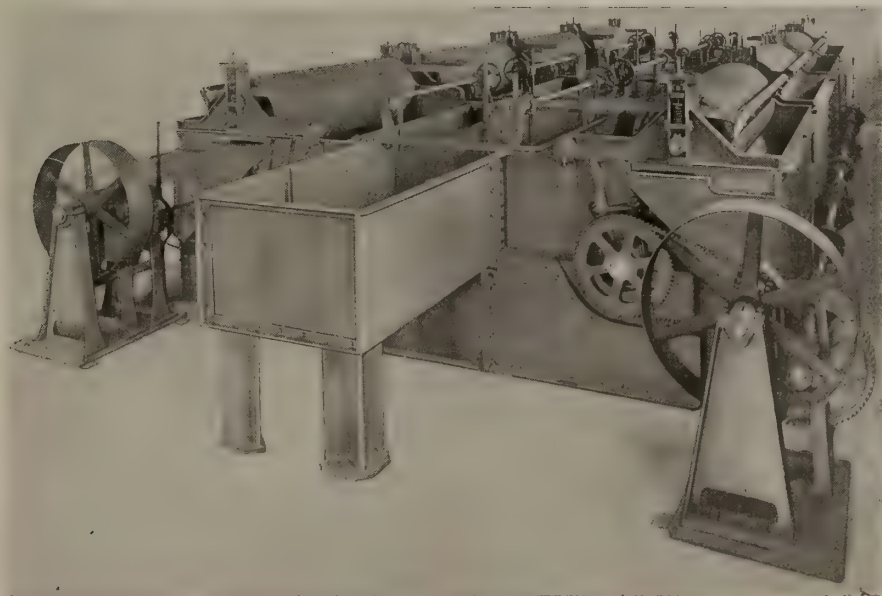
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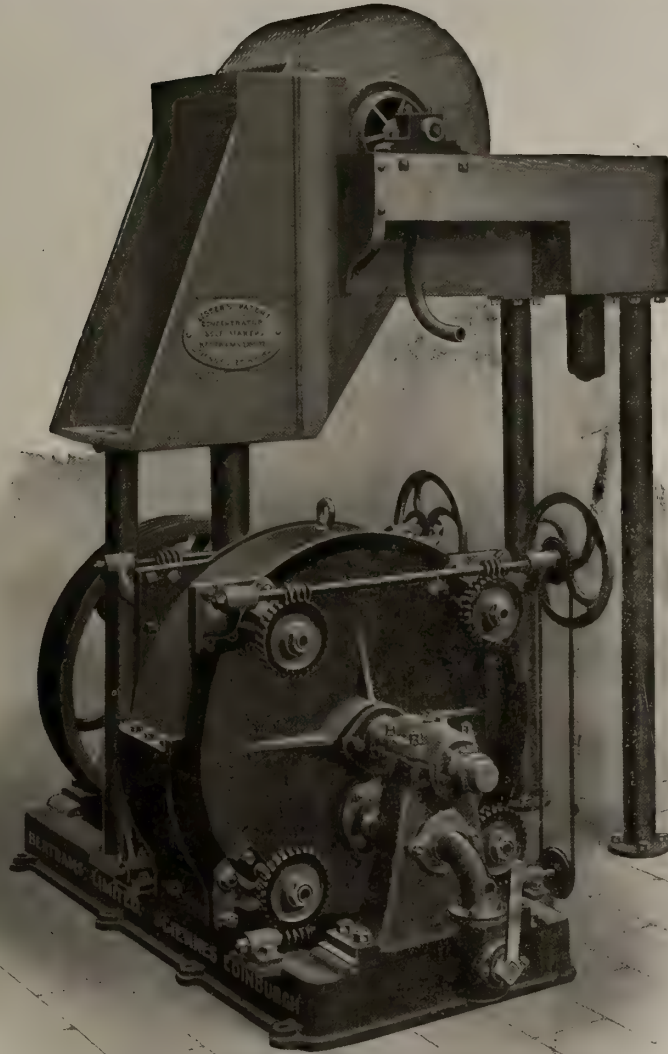
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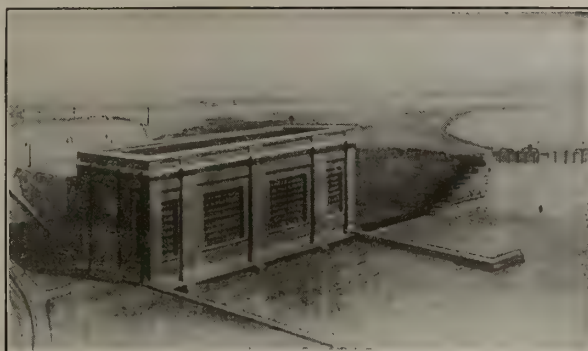
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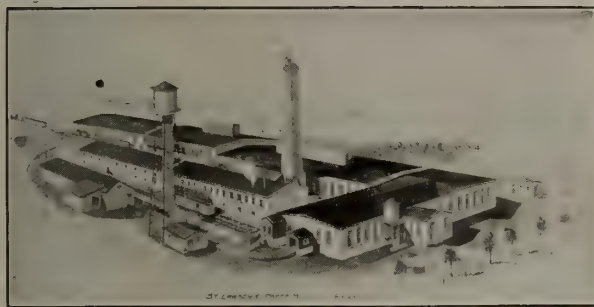
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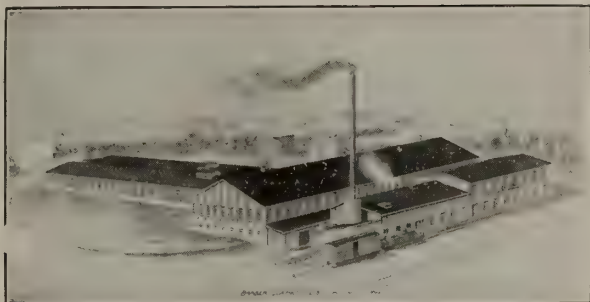
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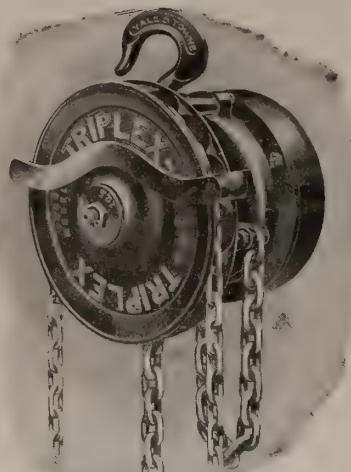


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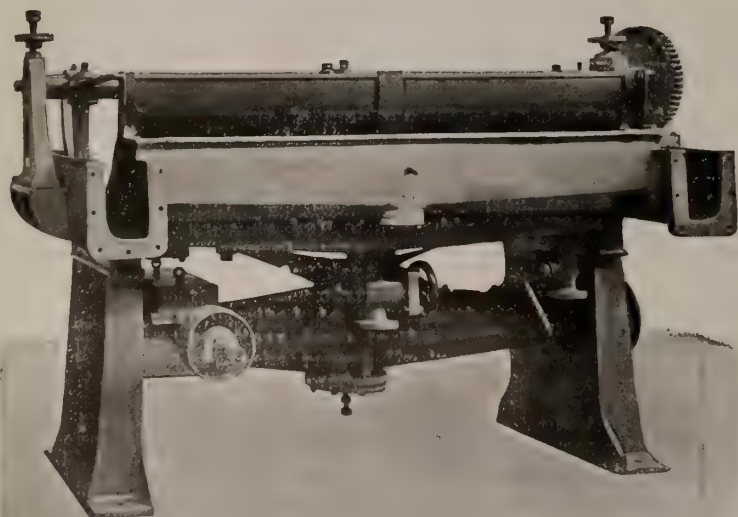
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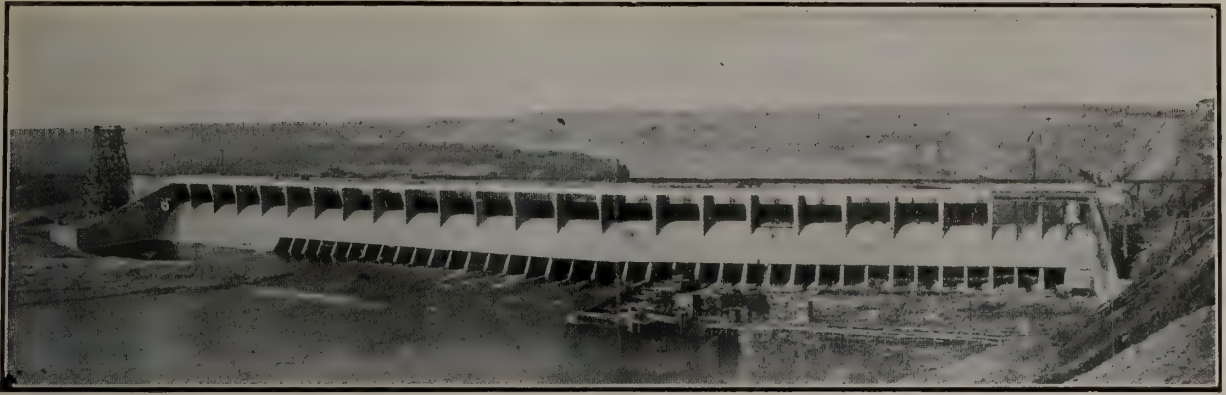
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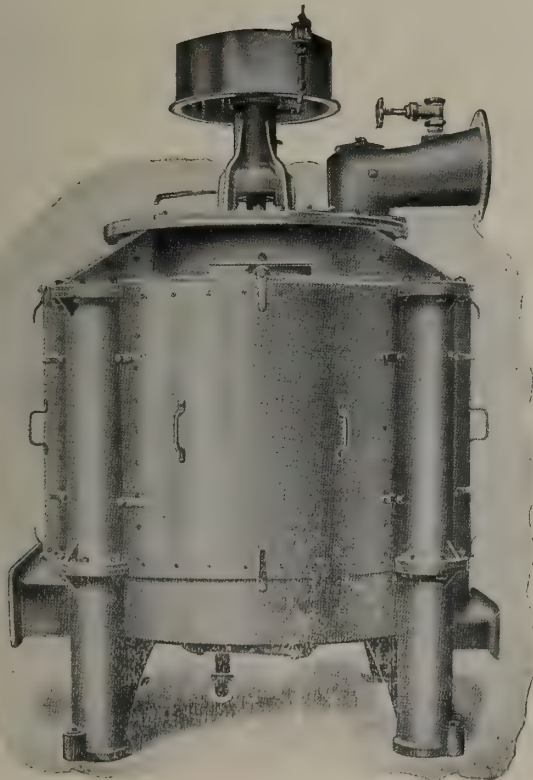
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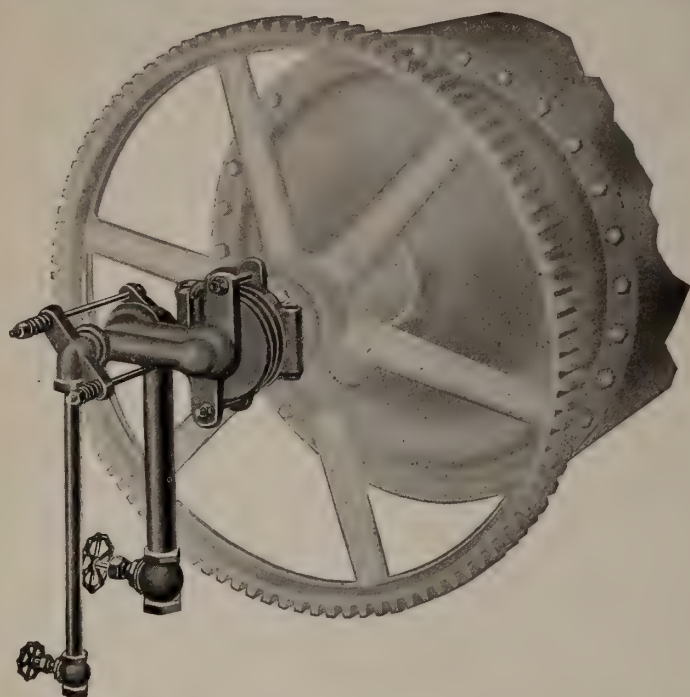
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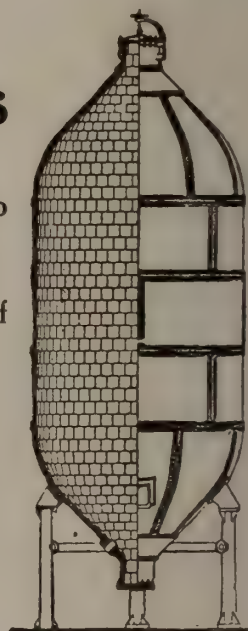
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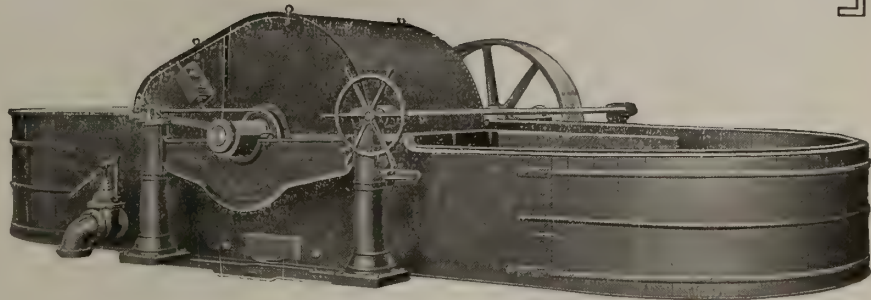
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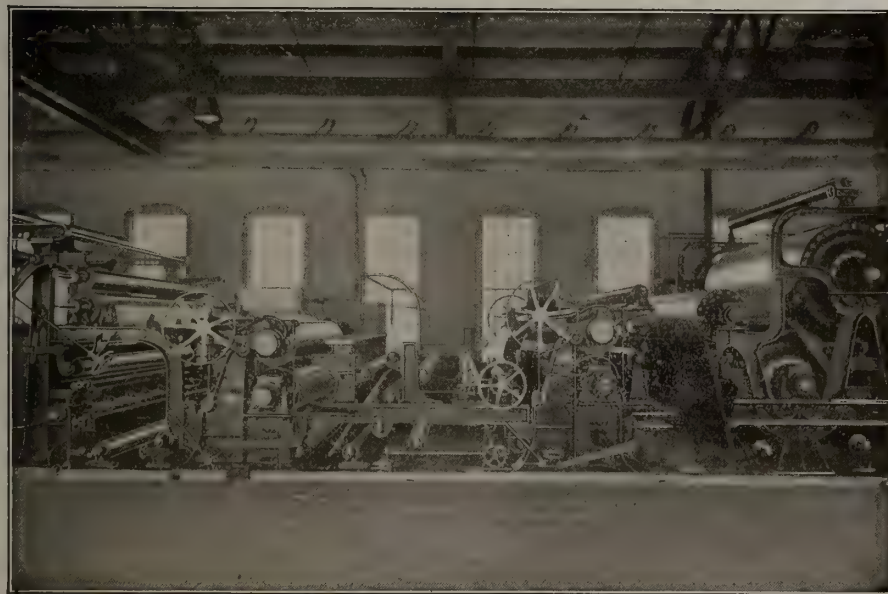
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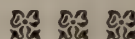
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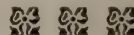
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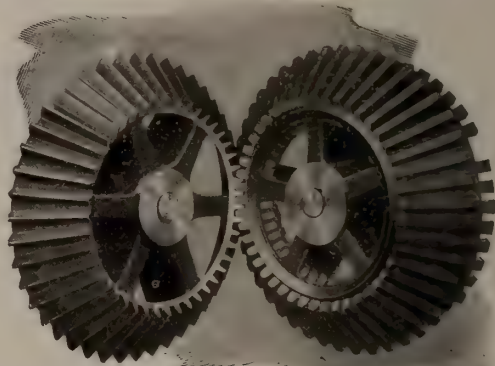
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No. 1

Safeguarding Our Forests

At a recent meeting of the Montreal Forum, Dean Adams, of McGill University, spoke very strongly about the need of safeguarding our forests. This is a subject which has been brought to the attention of the public so much in the past that doubtless a considerable number are weary of it, but there seems no other way to arouse public opinion than by this process of reiteration. The question is too important to leave to individual effort. A progressive firm or individual here and there becomes so impressed with the national danger that action is taken, but the great mass of those concerned do little or nothing in the matter. It is just for these that Dr. Adams' warning is published.

After showing that our forest areas were being depleted at a rapid rate, he went on to point out that the forests in the Northern belt were not of such value as those in the southern belt, but in the latter the really good timber was seriously depleted. One-half of the total timber in the Dominion was located in British Columbia. There had been enormous destruction of forests in the past, the lumbermen having cut out the trees in such a way that the latter contributed to the spread of fire, and more timber had been burned down than had been cut by the lumbermen. In some instances the fires had so seriously affected the soil that replenishing was out of the question. Dr. Adams referred to the methods of the St. Maurice Forest Pro-

tection Association, and of the Lower Ottawa Association, to guard against fire, and said their efforts were examples of what could be done to resist fires.

It was supposed by some that the northern forests were inexhaustible; surveys, however, showed that this was a mistake, and it was possible that our forest wealth could be exhausted. How could we conserve our forests? We could protect them from destruction by fire, and he was glad to note that in British Columbia efforts were being made to this end. We must also replant our forests, and follow the example of European countries, where reforestation had proved successful. He suggested in particular a scheme for conserving the forest resources in the northern belt, so that the country would have a permanent source of supply which would bring in a large annual revenue. The reason why such a scheme was not carried out was to be found in the changing character of governments, who preferred to pass it on from time to time rather than incur the great expense. A strong public opinion was needed in order to force a government to take up this question; it was only in this way that any government could be compelled to make the necessary expenditure.

A few days ago Ontario appointed a fire marshal who will be given power to oversee all matters relating to fire losses, insurance and kindred questions. Such an official might well be appointed in all the Provinces, and have the care and protection of our forests, in so far as the danger from fire is concerned, placed under his control.

One thing is certain. Our forests are not inexhaustible, and further, there is little or no concerted action on the part of the authorities to safeguard and preserve them. Action is needed.

Reindeer versus Goats

A certain well-known pickle manufacturer has achieved fame and a fortune by advertising "57 varieties." Apparently he goes on the assumption that if one brand does not suit a particular palate, another may. He is a sort of "all things to all men" advocate.

In much the same way reindeer have adapted themselves to about 57 varieties of our social, economic and industrial life. These hardy creatures were first brought over from Norway by Dr. Grenfell, the famous missionary of the Labrador. He planned to use them for hauling sleighs in place of dogs, and also for supplying milk, meat and clothing to the people of that snow-swept region. From Labrador they were transplanted to Alaska and to other parts of the far north, where their presence added to the health, happiness and prosperity of the Indians and other inhabitants. As the reindeer are capable of finding their food under a thick layer of snow, and prefer moss and snowballs to ordinary provender, they seemed ideal creatures for the far north.

Later a new and heretofore unsuspected use has been found for these animals. The Laurentide Company of Grand Mere, one of our more progressive pulp companies, recently planted over large areas of waste land with forest trees and seedlings. They soon found that the seedlings from the hardwood trees grew much faster than the young evergreens, and threatened the latter with extinction. In an effort to keep down the growth of hardwood two goats with large, healthy appetites were turned loose on the young seedlings. However, all trees look alike to a goat, while the sense of taste has long been a lost one to creatures whose staple article of diet is tin cans and rusty stove lids. At any rate, these ruminating quadrupeds who ate everything in sight, were soon chased from their newly found pasture field, and reindeer substituted. The latter seemed to know what was expected of them, for they at once got busy on the young hardwood trees, and left the coniferous seedlings severely alone. They have been on the job all summer, but have not eaten a single spruce or pine. In the winter they will pay for their board by hauling sleds formerly hauled by dogs, and after a day's run can further earn their keep by eating off the tops of the more aggressive hardwood trees.

The experiment made by the Laurentide Company promises much for other concerns with similar problems on their hands. It shows that the reindeer brought over here to perform a certain specified work are capable of doing many other useful things, and will, eventually, become important economic factors in connection with the development of the North country.

It is fortunate for the reindeer that there is no Union law or Alien Labor Act in connection with the animal world, or else the goats and dogs, deprived of food and employment, might combine against these imported creatures.

The Dyestuffs Problem

"Yellow journalism" in a very literal sense is making its appearance in Canada. The growing scarcity of dyestuffs for the bleaching of news print has resulted in many manufacturers turning out paper in its natural creamy or dull gray color. Up to the present time Canadian paper manufacturers, like others throughout the world, were dependent on Germany for dye stuffs with which to color or bleach news print. Since the outbreak of the war there has been no importations of German dyestuffs, and as stocks on hand become exhausted manufacturers are forced to give consumers the natural, unbleached product. The result of the scarcity of dyestuffs is seen in many of our large papers. They are now appearing in a dull gray or yellowish tint, on which the black ink does not give the pleasing contrast formerly found in the white clear hue of other days.

The scarcity of dyestuffs brings us face to face with the question of the interdependence of one nation on another. In connection with aniline dyes, Germany had a practical monopoly of the world's markets, due largely to the painstaking efforts put forth by her chemists and scientists through long years of research. It also shows that this country, the United States, Great Britain and other nations should get busy and organize their industries so as to make themselves independent of Germany. This, of course, takes time and much money, and in the meantime we must get along the best we can without any German importations.

In an economic sense it bears out the old Biblical saying that "no man liveth unto himself," and what is true of an individual is equally true of a nation. One country cannot be destroyed or its industries ruined without affecting all other countries with whom it has been in the habit of trading. We are now endeavoring to destroy Prussian militarism, and to ruin the trade of the German people, and in other ways punish them for having plunged the world into the greatest war in its history. In this very laudable enterprise we ourselves will suffer, the chief satisfaction being that we will inflict greater suffering upon the Germans than they can possibly inflict upon us. However, this scarcity of dyestuffs indicates our former dependency upon the Germans. It is "up to" our own chemists to make good the deficiency.

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 M. P. HUBBARD.
 SAM IRONS.
 F. KEELING.
 A. LAMOTHE.
 O. B. LANE.
 S. L. MASSON.
 MALCOLM MACDONALD.
 ALB. MORIN.
 AL. MOON.
 BERT MOORE.
 LEONARD MOULD.
 T. W. McSKIMMING.
 E. P. OCKENDEN.
 C. S. L. PEARCE.
 JACK PENDER.
 JACK PULLEN.
 H. RATHBONE.
 PRINCE ROSARIO.
 J. S. SCOTT.
 GEO. STAINEN.
 J. SUNDERLAND.
 JOS. WEBB.
 ROBERT WILSON.

John Rickinson and Co.

J. A. SHELLEY.
 J. MATHIESON.

Trent River Paper Company, Ltd.

ROSS R. HERMAN.

Riordan Pulp and Paper Company,
Limited.

Hawkesbury Mill:

J. RAE.
 G. SOPLENIK.
 JOHN BOYDELL.
 J. DESLAURIER.
 JOHN BOYDELL.
 R. WEBSTER.
 J. MCGILLIS.
 R. FIGURE.
 STEVE HOCK.
 PAVEL YUHUMUIK.
 G. SAPELEINK.
 J. BUCHANNAN.
 E. SEVIYUIK.
 B. GARLIEG.
 JOHN MCGILLIS.
 L. H. DESLAURIER.
 J. J. BOYDELL.

Merritton Mill:

J. HANLEY.
 J. FIEVE.
 T. LAMB.
 F. PRATT.

Wood Dept. and Saw Mills:

Capt. C. E. READ.
 Sergt. ALEXANDER FENTON.
 Q.M.S. C. SCOTT CHOWN.
 Pte. ROLLAND WILLIS.
 Pte. HAROLD BATES.
 Pte. JNO. TURNBULL.
 Pte. MILTON J. TAYLOR.
 Pte. WILFRID ROCHON.
 Pte. J. ROBILLARD.
 Pte. J. E. JEANOTTE.
 C. SMITH.
 L. HANDYSIDE.

Dominion Paper Company.

WM. ROLLO CURRIE.

Bathurst Lumber Company, Limited.

H. SWEENEY.
 C. L. BROWN.
 P. DONETI.
 P. JUNEAU.

Alex. McArthur and Co., Limited.

HARRY PREW.

S. R. HART AND COMPANY.

FRANK BEDDOW.
 GEORGE COLLINS.
 THOMAS DRINKWATER.
 GORDON EDGAR.
 Lieut. MELVILLE M. HART.
 ALFRED HIBBERT.
 THOMAS ROGERS.
 PERCY RICHARDS.
 ROY STAMPS.



Corporal Sidney Lamplough, 2nd Brigade, 1st. C. E. F.,
 Wounded Nov. 4th, 1915.



John McGillis, 77th Regt. of Ottawa, formerly with Rior-
 dan Pulp and Paper Co.

DOING THEIR BIT

Not all the Fords are of the "Henry" type, as the pictures of the four Ford brothers below will indicate. They are sons of Mr. J. Ford, the well-known paper

manufacturer of Portneuf Station, P.Q. To have four sons at the front fighting for King and Country is a record any father should be proud to hold.



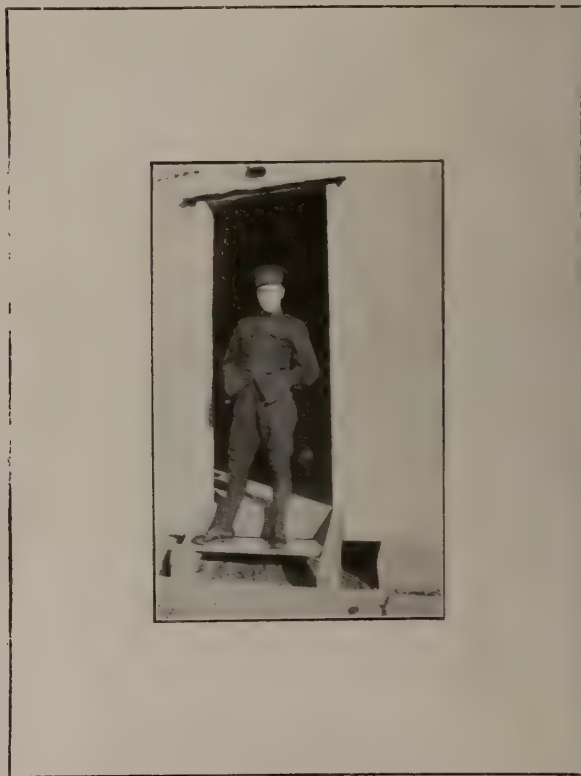
Captain W. D. Ford, 2nd Univ. Co., P.P.C.L.I., France.



Corporal Eric A. Ford, 5th Canadian Mounted Rifles, Flanders.



Private Thos. B. Ford, 5th C. A. S. C.



Private Harry Ford.



A Riordan Pulp and Paper Employee.
L. H. Leslaurier, 2nd Divisional Signal Co., Canadian
Engineers.



J. J. Boydell, H.M.S. Hocelaga. He was formerly employed by the Riordan Pulp and Paper Company.



Some Aspects of the Color Tie-up.

In order to understand the present situation it will be necessary to know something about the color business before the European war began.

In the early days colors used for paper were made from logwood, sunae, indigo, and other vegetable sources. At present, however, our colors are almost altogether manufactured from coal tar. The coal tar industry dates back to 1856, when an English boy, later honored as Sir William Henry Perkins, discovered mauve aniline. Soon after this discovery, the manufacture of aniline colors from coal tar was begun in Germany, and the Germans have continually developed the industry until at present it has reached a very high state of perfection.

It might be well to state here that only 6 per cent of the coal tar itself is useful for the manufacture of color. Out of this 6 per cent all of the twelve base colors are manufactured; and from these twelve, through very elaborate and expensive processes, there have been manufactured about 1,200 other shades.

In Germany there are twenty-two factories manufacturing dyestuffs, but the larger proportion of the total output is manufactured by four concerns. These plants are very large; for instance, one of them has in operation 400 steam locomotives, purchases sulphuric acid in tank steamers and employs about 10,000 workmen. These plants are practically under Government control.

It is a well-known fact that most of the colors used in this country are of German manufacture. Consequently, when the war started there was much anxiety among color users. Figures show the imports of color to this country to be worth about ten million dollars per year, or 85 per cent of the total value of the colors we use. Having this fact in mind, you can realize how seriously the embargo on color affects the textile and paper manufacturers.

At the outbreak of the war, the color manufacturers' agents were swamped with orders from all sources, but they handled the situation very fairly by proportioning the available stock according to the amounts the different companies customarily used.

At the present time American color factories are producing a certain amount of paste colors, which is the form used years ago. Blues and reds in the powdered form can be bought, but the colors brown, green and orange have practically been used up, and most of the mills are finding it necessary to use substitutes. Sap brown, a color which is used in carload lots by the lower grade mills, is no more to be had. An umber is being used for a substitute.

Of course, the textile, paper, ink, paint and varnish manufacturers will welcome any relief in the color situation, but it would seem that a new invention in the process of manufacturing color might work out more slowly than would be expected at the start. We all know that the colors we are using to-day are the result of years of expert work by experienced chemists, with Government backing. The results we are able to obtain with the present dyes, which are much better, faster, brighter and easier to handle than previous colors, would make it seem that new companies with new processes might have troubles that would be hard to overcome.—James R. Dearden in "Strathmorean."

THE CHARACTERISTICS OF FIBRES

No. 2.

(Specially Written for the Pulp and Paper Magazine by H. A. Maddox, of Manchester.)

In No. 1 paper we considered in some detail the principle microscopic features of linen, cotton and esparto fibres. Treating in the same vein, we now pass on to the description of straw, jute, bamboo, manilla and china grass. As was pointed out in our first paper,



Spiral fibres and Sclerenchymatous cells from straw pulp.

it is very difficult to master the identification of the numerous and varied papermaking fibres from the study of literary matter alone, but by detailing the strong individual characteristics and peculiarities of the separate varieties the practical task may be rendered much lighter.

The typical straw fibre is closely related to esparto, but is often shorter in length and wider in diameter, the ultimate fibre measuring about .015 millimetres against .012 millimetres for esparto. The ends of the fibres are usually tapered to fine points, but in microscopic examination it is unwise to place too much reliance on this feature. The canal or lumen is plainly visible up the fibre, and usually varies slightly in width. A distinction is to be found between straw

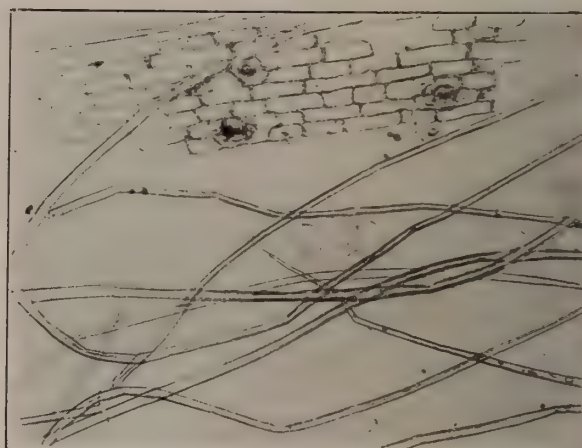
CENTURY OLD PROBLEMS.

It may be interesting to note that the scheme lately adopted by various technical associations of the paper trade in the direction of offering prizes for essays and methods for improving manufacture has long been the object of the Society of Arts. In the "Gentleman's Magazine" for June, 1804, the following paragraphs appeared:—

PREMIUMS FOR ENCOURAGING MANUFACTURE.—151. PAPER FROM THE RAW VEGETABLE SUBSTANCES. To the person in Great Britain, who shall, between the first of January, 1804, and the first of January, 1805, make the greatest quantity, and of the best quality (not less than ten reams), of good and useful paper, from raw vegetable sub- and esparto fibres in the way they exhibit bends. Straw is not so flexible as esparto, therefore instead of bending in a graceful curve, the fibres acquire a sink. Certain of them exhibit a number of these kinds of creases which serve as a guide to distinction between straw and esparto. However, in the identifica-

tion of straw pulp under the microscope, we do not rely so much upon the features of the fibre as upon the accompanying cells. As in the case of esparto we have the pear or tooth cell as a sure guide, so in the case of straw we have what is known as the voluminous or parenchymatous cell. Then again, peculiar to straw, there are the spiral or ring cells as distinctive features. The voluminous cell is a transparent oval or slightly rounded oblong shaped feature. In the original plant, these cells sit side by side on the fibre (as in the photomicrograph) as a sort of pithy matter. In the pulp they often occur linked together, presenting an appearance something after the idea of the Christmas bon-bon, so far as shape is concerned. They are very thin walled and transparent, and are generally worked with numerous fine pores. The high power reproduction of a parenchymatous cell gives a very good idea of the shape and markings to be expected. Although generally held to be conclusive proof of the presence of straw, it is not desirable to come to too hasty a conclusion, as very similar characteristics may be encountered in the pulp from bamboo.

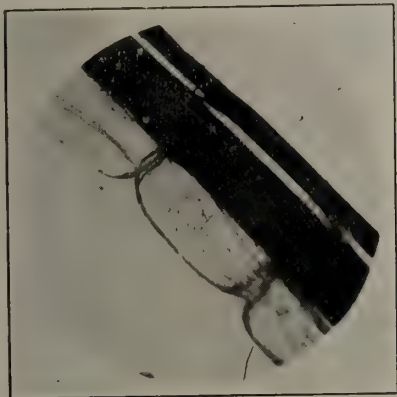
The spirals or ring cells are always present in straw pulp but are not so numerous as the voluminous cells. Consequently they are not so readily to be observed unless special efforts are made to secure their inclusion on the glass. It is quite a common mistake to imagine the presence of rings, when air bubbles are the cause. The student should closely observe the structure and appearance of one against the other to guard against future error. Our photo micrographs of spirals and



Manilla Hemp Fibres and Cells, Magnified 100.

rings make clear what is to be expected. The complete spiral shown, will be seen to exhibit slight markings, but the perforated cell attached to the end of the spiral and looking like a tail must not be confounded with the spiral itself. It is, in fact, a sclerenchymatous cell, another typical straw pulp feature. Reverting to the spirals and rings, it is but comparatively rarely that complete spirals may be met with in beaten pulp or finished paper. More often, the beating process mutilates them and reduces them to single or several coils.

The sclerenchymatous cells mentioned are thick walled and of a silicious nature. Under the microscope they appear to be of a bluish cast. In shape they are short narrow and irregular with rounded ends and generally a slight curve or bend. The whole surface is pitted with pores or markings of a considerable size. In common with esparto, straw pulp embodies a number of serrated cuticular or epidermal cells. They are readily recognized by their corrugated or toothed appearance and strip shape. In length they differ considerably, particularly in the



Parenchymatous cells sitting on fibre.

case of straw cells. The serrated cells in the various straws, as derived from wheat, rye, oats, barley, etc., are all of different dimensions. Esparto serrated cells, on the other hand exhibit some slight semblance of uniformity in length.

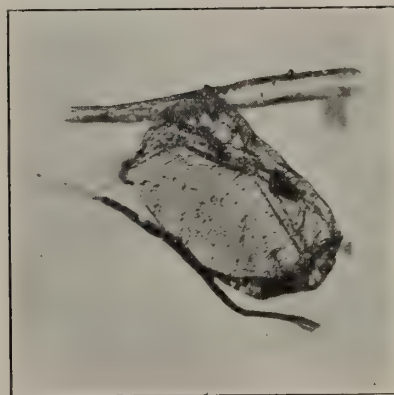
The next type of fibre for consideration is jute, the typical ligno-cellulose fibre. In some respects the fibres are akin to hemp, but much more irregular, particularly as regards the canal. The walls of the fibre are generally thick, but as the canal widens, the side-walls naturally narrow. The fibres usually show numerous cross markings, which appear very distinct. Occasional nodes or joints are met with, somewhat similar in appearance to those on linen fibres. In length, the ultimate jute fibre is much shorter than other rag esparto. On the average, the jute fibre will be found esparto. On the average, the jute fibre will be found to measure about 1-12th of an inch. Widthways, or diameter, the jute is about the same width as linen. The ends of the fibres are spear shaped, or tapered, and the canal is clearly traceable right to the end of the point. By far the most conspicuous feature of jute, under the microscope, is the structure of the canal. This always appears very distinct, particularly when treated with a staining solution. The canal widens and narrows several times in a single fibre, sometimes becoming almost invisible, at other times swelling out to almost touch the sides. If jute fibres have been so mutilated during the beating treatment as to be practically unrecognizable they can be distinguished with practical certainty by resorting to the use of solutions for color reactions. These will be treated upon later.

Although not used to any considerable extent at the present time it behoves the student of papermaking fibres to make himself well acquainted with bamboo. It has been realized to represent a very valuable type of raw material for good class printing paper and in the future, possibly the near future, it is certain that extended use will be made of bamboo. Hence we deem it desirable to treat in fairly close detail of the charac-

teristics and chief features of the fibre, accompanying cells and other matter.

Taking first the typical fibre, this in many ways resembles straw, which is not surprising inasmuch as the bamboo plant belongs to the same order as straw. In length, it measures about 4 mm. and is therefore about four times that of straw or esparto. The diameter, however, is practically equal to that of straw. Full length fibres are not to be expected in beaten pulp and finished paper, therefore the ends are rarely attached, whereas in the case of straw pulp, ultimate fibres are the rule. When they are met with, the ends will be observed to be pointed rather finely, with the lumen traversing to the end. The fibre itself is round, very thin, smooth and regular, with a rather finely defined canal, which tapers correspondingly with the ends of the fibres. The fibres are sometimes perforated here and there and are always accompanied by a large number of serrated cells, cuticular or parenchymatous cells and pithy matter. The parenchymatous cells are very similar to those from straw and vary in shape from round to oblong and square. They also vary considerably in length, some being very squat and other quite elongated. As a general rule they are perforated with numerous pores, which show very plainly under the microscope. As with straw pulp, occasional narrow, round, perforated sclerenchymatous cells are encountered. Pithy matter in the form of mushy balls is a prominent characteristic of bamboo pulp, and makes a distinguishing feature between bamboo and straw. Serrated or corrugated cells are fairly numerous, but being very similar to those which occur in straw or esparto, they are rather a hindrance than a help to the speedy identification of bamboo pulp with any certainty. Generally speaking, the presence of the cells will lead to the suggestion that the pulp is bamboo and the length and appearance of the fibres will add the necessary conviction.

Briefly surveying the remaining fibres, manilla hemp is one of the longest and strongest fibres we have, measuring on an average about 8 millimeters. In diameter it is equal to linen. The ordinary fibre is

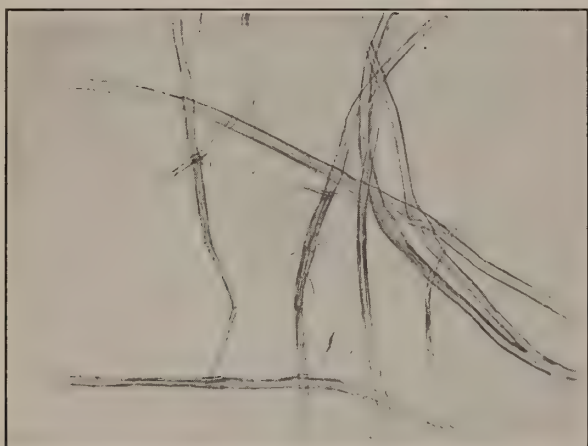


Parenchymatous cell from straw under high magnification, showing characteristic markings.

very uniform, with smooth and regular side-walls, hence a fairly even lumen. The side-walls are thin, signifying a wide lumen, and the latter is also very distinct. Frequent cross markings are to be observed on the fibres, but there are no nodes or points to confuse them with linen. Occasional kinks are to be met with, rather than graceful bends. The end of the fibres are finely and gradually tapered to a point, often bearing broad cross markings almost to the termination. An invaluable aid to the detection of man-

illa hemp pulp under the microscope consists in the presence of characteristic parenchymatous cells. These are small and oblong shaped, and they frequently occur in masses like the bricks of a partly built wall. Without these, the fibres might sometimes be mistaken for jute or chemical wood, but their presence makes the determination one of practical uncertainty.

The remaining fibre, china grass, is again very long, the ultimate fibre measuring, according to authority, 22 millimeters. What is of more importance in the microscopic examination of beaten or processed pulp, is the width of the fibre, for this is very characteristic, being .05 millimeters, against .02 millimeters for linen and .03 millimeters for chemical wood. In fact, china grass is about the widest of the many papermaking fibres in present use. The fibres of china grass are transparent, and very irregular, bearing a multitude of longitudinal fissures, or striae, sometimes running directly parallel to the fibre, at other times radiating towards the sides. Occasional smooth and regular fibres are to be observed, but they are not by any means typical. In keeping with the fibres themselves are the ends, which are very irregular, varying between tapered, spear-shaped, blunt rounded and spatulated or spoon shaped. The canal, or lumen, is well defined, and may show grains in the interior. The fibre most likely to be confounded with china grass is hemp, owing to an occasional similarity in fissure making, or striae, but the respective widths of the fibres, plus the more or less complete elimination of the canal in the case of hemp, are usually sufficient evidence on which to base a correct determination.



Jute Fibres, Magnified 100.

Having now considered the principal annual plant fibres in fairly comprehensive fashion, we shall, in our next paper, devote consideration to the important types of fibrous pulp derived from the trees of the coniferous and deciduous families.

HARRY A. MADDUX.

SECRETARY DANIELS' PAPER BURNS.

The building and plant of the News and Observer, at Raleigh, N.C., owned by Secretary of the Navy Daniels, was destroyed by fire a few days ago.

Testing and Sampling Wood Pulp

(Special to Pulp and Paper Magazine.)

New York, Dec. 27, 1915.

The American Paper and Pulp Association and the Association of American Wood Pulp Importers have, after two years of careful experimenting, agreed upon a standard method of sampling and testing pulp. This agreement is of great importance to everyone interested in the manufacture and sale of pulp, as it specifies exactly how pulp is to be handled, substituting all former methods employed by chemists and eliminating the continued controversies caused by varying opinions.

The difference of opinions in sampling and testing foreign pulp caused many controversies between importer and consumer, so several years ago a committee was appointed by the two associations to conduct experiments, and use such means as would enable them to reach a standard method.

These experiments were carried on at Holyoke, Mass., at a great cost. Experts in charge of the experiments have made their report, and the following instructions are now given as the standard method of testing and sampling pulp:

All tests must be made by a chemist duly authorized and approved by the joint committee representing the Association of American Wood Pulp Importers and the American Paper and Pulp Association, and the Scandinavian Wood Pulp Associations, and must be made strictly in accordance with the following instructions—otherwise the committee reserves the right to withdraw the approval of any chemist at any time.

Before proceeding to the weighing and sampling, the chemist must ascertain that no less than one-half of the parcel in question is available.

Number—Not less than 5 per cent, nor more than 10 per cent, of the entire shipment, but not less than 10 bales shall be sampled. Samples to be drawn only from sound and intact bales, from different sections of the entire shipment, and analyst shall be careful to observe that no unusual conditions prevail in the selection of the bales. The accurate weight of all bales sampled to be ascertained by sworn weigher before sampling, or, wherever sworn weigher is not available, by a competent person who must make sworn affidavit that weights are correct, and no other bales than those weighed to be sampled, and whenever bales are numbered, the number is to be given in addition to the weight.

Method of Sampling.

Depth of Boring.—The sample shall be taken by boring into a bale to a depth of three inches (7.62 centimeters) with a special auger which cuts a disc about 4 inches (10.16 centimeters) in diameter.

Selection of Discs.—The discs shall be removed and ten of them taken as a sample, these to be selected as follows:

- 1 disc 2nd sheet from the wrapper.
- 2 " 1 in. (2.5 centimeters) deep.
- 3 " 2 in. (5.05 ") "
- 4 " 3 in. (7.62 ") "

Location of Borings.—The holes to be bored shall be so located that in five successive bales they will represent a portion extending diagonally across the bale. Each bale to be bored but once. The first hole to be bored at the corner, the edges of the cut being at a distance of one inch from the edge of the bale. The second cut shall then be made half way between the location of the first cut and the centre of the bale, the third bale shall be cut at the centre, the fourth bale half between the centre and the corner and the fifth bale in the opposite corner in a position corresponding to the first.

All samples must be either weighed immediately after being drawn from the bales by accurate scales or, when this is impracticable, must be put into air-tight vessels, made of metal or glass with ground or metal stoppers, and due care must be used in the transportation of such samples until they can be properly weighed at the laboratory of the chemists. The entire bulk of samples selected from the bales must be dried out for the test. The temperature in the drying

oven shall not exceed 212 degs. F.

Chemists must have proper and adequate equipment for weighing and sampling the bales, and for the weighing and drying of samples.

All sampling of pulp must be done by or supervised by the approved chemist personally or by his competent bona fide assistants—each chemist to file with the committee a complete list of his bona fide assistants who will do the sampling, such list to have approval of the committee. The chemist will be held responsible for the correct sampling by his approved assistants. The committee shall at any time have the privilege of investigating the sampling done by chemists or their assistants.

(Signed),

Am. Pulp & Paper Ass'n.

Herbert W. Mason.
Joseph B. Woodruff.
E. B. Murray.

Am. Wood Pulp Importers' Ass'n.

Leon Gottheil.
S. Goldman.
James Rosenberg.

ZACATION AS A PAPER MAKING MATERIAL

(By Charles J. Brand, in Charge, and Jason L.L. Merrill, Assistant Chemist, Paper-Plant Investigations. In U. S. Government Bulletin.)

There appears to be a constant and increasing interest in the discovery of plant materials which may be substituted for wood and rags in the making of paper stock of various kinds. The uses to which paper may be put are multiplying rapidly, the consumption for present purposes is increasing greatly, and there is a constant depletion of existing supplies. Many materials from both wild and cultivated plants are at present going to waste, so that a natural desire to save them adds to the general interest in the subject. This interest is world wide and practically spontaneous. In southern China bamboos and rice straw are under experiment; in Manchuria the stalks of the grain sorghums; in Mexico wood waste and various trees not now used for other purposes; and in Egypt the plant formation known as Nile suud, which constitutes the dense jungle growth of the upper White Nile and contains a large proportion of papyrus plants. In the Philippines attention is being given to bamboos and various other grasses and also to the fibrous by-products of the Manila-hemp industry. In this country scarcely a month passes during which some new wild plant or crop waste is not proposed as a certain and permanent relief to the paper manufacturer from the stress resulting from the rising cost of raw materials.

The past 10 years have witnessed an enormous growth in the pulp and paper industry and a keener realization of the fact that the present wood supply of the United States can not indefinitely withstand the demands placed upon it. About 80 per cent of the paper stock used in this country is derived from wood. In 1900 about 2,000,000 cords of wood were used for pulp manufacture, and the present use is approximately 4,500,000 cords a year. Pulp-wood imports in this country increased from 650,000 cords at \$4.20 per cord in 1907 to 1,036,000 cords at \$6.00 in 1913. In 1913, 131,000 tons of wood pulp were imported, as against 563,000 tons in 1913.

In a report of the United States Forest Service in 1914 the annual growth of wood in the United States is

placed at 12 cubic feet per acre per year, while there are being removed 36 cubic feet per acre per year; in other words, as a nation, wood is being used three times as fast as it grows. Without doubt imported wood will play an important rôle in the paper industry of this country for many years to come.

New woods are in common use to-day which would not have been considered a few years ago, and reforestation is being given very serious attention, all of which goes to show a desire on the part of the pulp manufacturer to husband his present source of supply or to secure new sources.

Since the demand for paper stock is gaining so rapidly upon the supply it is very clear that the price of raw material will continue to increase and in so doing will bring other raw materials into competition. It is for the reason that investigations of the adaptability of fibrous plants and crop wastes should be carried on with some of the more promising materials.

The office of Paper-Plant Investigations of the Bureau of Plant Industry has numerous materials under examination and proposes from time to time, as the data obtained may warrant, to publish the information which has been secured. The publication of these data will not mean that the work with the material has been completed or that the conclusions reached are final. There is always a possibility that further information and the devising of new and better methods may result in taking a raw material from the class of unpromising materials and placing it in the class of promising materials.

The work with zacaton (*Epicampes macroura* Benth.) has progressed to a point where at least a preliminary publication of results is desirable.

Botanical History and Systematic Position of Zacaton.

The genus *Epicampes* was established by Dr. J. S. Presl, of the University of Prague, in his treatment of the Gramineae in 1830. The type species of the genus is *Epicampes strictus*.

The following characterization of the genus is taken from Scribner:

Epicampes Presl, Rel. Haenk. 1:235, t. 39. 1830. Spikelets small, 1-flowered. Empty glumes 2, membranaceous, slightly unequal, convex on the back, carinate, often finely 3-nerved; flowering glumes 3-nerved, obtuse or emarginate, a little shorter or about the length of the empty glumes, and tipped with a slender, usually rather short awn, which is rarely wanting. Stamens 3. Styles distinct short; stigmas plumose. Grain included within the glumes, free. Tall, perennial grasses with usually very long, spikelike, many-flowered panicles.

The genus belongs to the tribe Agrostideae of Engler and Prantl, to which the true esparto, *Stipa tenacissima* L., also belongs. This grass is extensively used for paper making in the Old World, the raw material coming chiefly from Spain, Algeria, and Tripoli. The species *Epicampes macroura* has received several common names, most of which refer to the utilization of its roots in the manufacture of brushes. Broom-root grass, wire-grass, and rice-root grass are the common English names. Rice, in this case, has no relation to the well-known rice grain of commerce, but the name arises from the fact that the Mexican name for the roots is "Riaz de zacaton"; that is, roots of grass, in literal translation. Zacaton is the name most commonly applied to the species in Mexico. The French name for the root-brush material is "chien-dent," while "Mexican whisk" is still another name applied to it.

Distribution of Zacaton.

The genus *Epicampes* is exclusively American. About 16 species have been described, some of which, in the opinion of expert agrostologists, would not retain specific rank under critical study. The ranges of the various species extend from California and Texas southward to the Argentinian Andes. Mexico is richest in number of species, and there also the root-harvesting industry has reached its highest development.

Zacaton grows most profusely in the mountain regions east and west of the City of Mexico. It is especially luxuriant in the districts around Sayula and Toluca, in the States of Jalisco and Mexico, respectively (it will be remembered that the original collection of Humboldt and Bonpland was made on the mountain of Toluca), while the finest quality of roots is now said to be harvested around Uruapan, in the State of Michoacan. The grass is generally considered a pest, but a few attempts to subject it to crude methods of cultivation are reported to have given good results. It is perennial, and after the rainy season sends up new shoots profusely. These are relished by cattle while the tops are immature. Soon, however, the tops become so tough that stock refuse to eat them. The growth is almost entirely a wild one from self-sown seed. The mature panicles are not unlike those of grass, graded, and separated according to quality, length, and color, and finally baled ready for shipping, cleaning, and drying, the roots are cut from the top of timothy. Unless checked by fire, cultivation, or the harvesting of the roots, rice-root grass soon covers a field solidly. It is not uncommon to find areas many square miles in extent covered densely with this wild grass.

The grass is said to flower from August to October, depending upon altitude and other conditions, and

usually attains a height of 5 to 7 feet. The usable portions of the roots vary in length from 2 to 30 inches. The diameter of the roots range from one sixty-fourth to three thirty-seconds of an inch.

Vera Cruz and Tampico are the chief exporting ports, while France, Germany, and the United States are the chief users of the brushes into which the roots are manufactured. Roots of a pale yellow, a decidedly characteristic color, are preferred by the trade. It is estimated that an acre of grass yields a ton of marketable roots, and at least 3 tons of tops. At present the tops are not used in any way. It seems likely that root operators might find it worth while to attempt the utilization of the grass for pulp manufacture in sections where there are large acreages of luxuriant growth and where the cost of collecting the raw material in commercial quantities is not prohibitive.

Then follows a long description of the process of manufacturing, after which the following conclusion is reached:—

Zacaton grass may prove to be a valuable paper stock, although at present it is a waste product, and flourishes in a region remote from the paper-manufacturing sections.

The grass can be chemically reduced to paper stock by the soda process under less drastic and less expensive conditions than those employed for the reduction of poplar wood.

The well-known process, methods, and machinery employed for the manufacture of pulp from poplar wood are entirely suitable for the treatment of this material. In place of the wood-sawing, chipping, and screening machinery, a grass cutter, and possibly a duster, is required.

A production of 43 per cent of air-dry fibre from the air-dry grass is regarded as a very good yield, the fibre yield from poplar wood being from 46 to 48 per cent, and from esparto 43 per cent.

For bleaching the stock it has been found necessary to use more bleaching powder than in the case of poplar stock.

Paper manufactured from this stock has shown physical tests equal to those of a first-grade machine-finish printing paper.

The paper has a very satisfactory appearance and feeling. It is realized that in these two semi-commercial tests the maximum possibilities of this material in all probability have not been attained, and better results may reasonably be expected. Moreover, an experienced mill organization after a few months of operation would learn the qualities of the stock and be in a position greatly to improve the product.

It would not be advisable, nor even possible, from the work here described, to make any estimate of the cost of manufacture or the value of the product. Such data can be secured only by extensive experimentation on a semi-commercial scale or by actual mill operations.

PULP AND PAPER PROJECT ALLOWED TO LAPSE PRO TEM.

It is reported here that the Mettagami Pulp & Paper Company, which had intended erecting a large pulp and paper mill, to cost \$2,000,000 at Smooth Rock Falls, Ont., has decided to allow the scheme to remain undeveloped until the money markets become more favorable.

Ottawa Notes

Ottawa, Ont., Dec. 27.

Figures covering Canadian exports of printing paper to Great Britain, the United States and other countries during the months of September, October and November show that the last named month saw the largest total exports of any month of the year. Figures were recently published in the Pulp and Paper Magazine indicating the extent of exports up to the end of August. They indicated that Canada is doing an increasingly large trade in news print, and this is borne out by the showing made during the additional three months. The figures are as follows:

	September.	October.	November.
Great Britain	\$ 14,959	25,071	.....
United States	\$1,099,369	1,388,463	\$1,425,312
Australia	20,343	33,601	170,745
New Zealand	6,087	35,612	119,759
B. S. Africa	34,165	29,222	2,910
B. W. Indies	475	95	1,712
Argentina	16,999	33,730	16,064
Chili	1,380	.....	1,873
Costa Rica	700	629	.....
Porto Rico	893	.....	713
Brazil	1,684	4,216	1,897
Cuba	1,506	2,029	1,395
Panama	855	2,635	1,698
Colombia	750	827	2,516
Venezuela	2,457	1,801	1,470
Mexico	3,889	5,564	4,093
Ecuador	566	92	691
China	383	.....	.....
San Domingo . . . . .	.....	80	.....
Philippines . . . . .	.....	.....	92

Mr. Abraham Knechtel, chief forester of the Dominion Parks Branch of the Interior Department, died a week ago at his home in Ottawa. The deceased was born in Brussels, Ont., in 1859, and was in his 56th year at the time of his death. He was a pioneer in scientific forestry on this continent. He graduated in 1900 from Michigan Agricultural College, receiving his B.Sc. He then took a special forestry course at Cornell University, receiving the degree of forest engineer. For several years prior to his coming to Ottawa to take up work in the forestry branch of the Dominion Government he was attached to the forest, fish and game commission of New York State, and in that connection laid out the first forest plantation established by the state. In 1904 he was sent by the commission to Europe to study forest conditions and practise there, and for several years after his return he delivered lectures in New York under the auspices of the New York state school board. Six years ago he came to Ottawa in the position he held at the time of his death.

Paper mills in the city of Hull will not be affected by the reported intention of the Quebec Government to enforce the law prohibiting the operation of industrial plants on Sunday. The only paper manufacturing industry in Hull is that of the E. B. Eddy Company, whose manager, Mr. George H. Millen, told your correspondent that it had never been customary to operate the plant on Sundays. Occasionally the need arises for emergency repairs on that day, but otherwise no work is done. Consequently there will be no representatives from this district on the delegation of pulp and paper manufacturers, which, it is report-

ed, will wait on the Quebec authorities to protest against the law.

The Ontario Paper Company, Ltd., is applying for approval of plans for a new dock, which it proposes to build near the western outlet of the Rocky River in the Gulf of St. Lawrence.

According to Arnprior advices the McLachlin Lumber Company of that town will build its own pulp and paper mill instead of selling its pulpwood limits and site to an Ottawa firm for that purpose, as recently intimated in this correspondence. It is stated from Arnprior that the McLachlins are now razing the old water mills which have stood on their grounds for many years, and will utilize the site for the erection of a large ground wood plant. Mr. D. McLachlin has already admitted the company's intention of going into such an enterprise if found feasible, and has stated that his firm has enough pulpwood in its limits to support such a mill practically in perpetuity.

Mae.

WOOD PULP TOOTHBRUSHES.

The Standard, of Markdale, Ont., tells in a recent issue of a new style of toothbrush in the manufacture of which wood pulp plays a prominent part.

"Instead of going to the store and buying a toothbrush, as you have done heretofore, you may now buy a box of toothbrushes and as you use one you will throw it away. The others remain in dust-proof box until wanted.

"The newly patented scheme dispenses entirely with the use of animal bristles and makes use of points made of paper pulp impregnated with a cleansing powder and a sanitary agent. This composition is formed under pressure and the substitute bristles and the points form an nitegral part of the back on which they are mounted.

BRITISH COLUMBIA.

There is a possibility of a pulp mill to cost \$500,000 being erected at Quatsino Sound, B.C., where the Colonial Lumber and Paper Co. have more than 55,000 acres of pulp lands and a valuable water power. Mr. Lester W. David is negotiating for the purchase of the assets of the Colonial Co. for a Seattle syndicate, who are anxious to enter the pulp and paper industry in British Columbia. Messrs. Whalen Brothers, of the British Columbia Fibre Co., have asked for an injunction to restrain the sale, claiming that they have a prior agreement with the Colonial concern.

DE CEW GETS PATENT.

J. A. De Cew, one of the experts engaged in the Canadian Products Laboratories at McGill University, Montreal, has just been granted a Canadian patent for a method of making rosin and a United States patent for a wood preservative.

PAPER FROM SUGAR CANE.

In April last a small mill at Preston, Cuba, was established for the daily production of three to four tons of excellent wrapping paper from the compressed waste of sugar cane; a ton of waste making half a ton of paper. Some months ago machines were ordered for the production of fine writing and book papers.

THE GROWTH OF THE LONDON TIMES.

On November 1 last, The London Times appeared for the 41,000th time. Strictly speaking, not the 41,000th issue of the Times, for, during the first three years of its career, it was known as the Daily Universal Register, and it was not until January 1, 1788, that the present title was used. But the numbering was consecutive, and thus maintained a continuity which has not been broken for more than 130 years.

On every weekday of these 130 years—a few Christmas days being the only exception—the daily record of English history in the making has issued from “the offices in Printing-house-square, in the parish of St. Ann, Blackfriars, in the City of London.”

No history of the Times has ever been written, though much history has been compiled from the files; nor is this the occasion for recording even a summary of it. “Today”, says the Times, “the energies of all are devoted to the present rather than to the past, and it must suffice to record that while the events chronicled by the Times are more momentous than any in English history, its circulation is far greater than at any previous time in its career.

“One incident in our annals is worth recalling at this moment. The issue of the Times for April 5, 1886 (No. 31,725) was republished in book form in 1888 at Leipzig with German notes by Dr. F. Landmann. We do not know whether the present issue is destined for a similar honor.

“No. 31,000 was published on December 11, 1883, and in the 32 years which have passed since then the material progress of the race, it may safely be said, has been greater than in any previous third of a century. Four years before Queen Victoria’s Jubilee, Gladstone was Prime Minister, Granville was at the Foreign Office, and the attention of this country was divided between Egypt and Ireland. Grevy was President of the French Republic, Alexander III, was crowned Emperor of Russia, Germany was emerging from the Kulturkampf, Mr. Childers, the Chancellor of the Exchequer, budgeted for £85,000,000.

“Our issue of December 1 was a 16-page paper, and the leading articles dealt with Parnell, the commercial agreement with Turkey, Sir Frederick Leighton’s address to the Royal Academy, Professor Owen’s work for Science, and Mr. Lister’s peerage, and the recent explosions on the Underground Railway. The principal news is the death of Hicks Pasha in the Sudan, announced in a telegram from Khartoum. A telegram from Belgrade records the complete tranquillity of Serbia, in spite of reports to the contrary. Not to Serbia alone has the passage of 32 years brought a loss of tranquillity.”

PAPER FROM HOPS.

Good paper, it is said, can be produced from refuse hops that have hitherto been thrown away in breweries.

PROVINCIAL PAPER COMPANY’S NEW OFFICE.

The Provincial Paper Mills Company, Ltd., have taken a new office in Montreal at 501 McGill Building, 211 McGill St. Mr. William Gorman will have charge of the office and represent the company in Montreal and Ottawa.

JAPANESE INQUIRY FOR BLEACHED SULPHITE PULP.

A communication has been received from a firm in Japan importing paper-makers’ supplies. They state that the prospects for the sale of Canadian pulp in the Japanese market are bright. Owing to the curtailment of European supplies they have been under considerable difficulties in filling their requirements of bleached sulphite pulp, for which they have a large demand. They are therefore desirous of being put in touch with reliable Canadian mills producing bleached sulphite or sulphate pulp, and who are in a position to consider doing business with Japan. The name and address of the firm referred to may be obtained on application to the Department of Trade and Commerce, Ottawa. (Refer File No. A-1107 or Trade Inquiry No. 1197.)

TORONTO WALLPAPER MAN DEAD.

The death of Mr. Thos. Arthur Staunton, president of the Staunton Wallpaper Manufacturing Co., Ltd., occurred on Sunday morning at the residence of his mother, 93 Roxboro’ street east, Toronto. Mr. Staunton, who was in his fiftieth year, was one of Toronto’s prominent manufacturers.

PAPER OF 1,600 POUNDS FOR EACH FAMILY.

That Wisconsin is an ample provider is shown by annual production recorded in Federal reports, taking the usual number of persons, five, as constituting the average family. The amount per family of paper manufactured is 1,600 pounds.

NEWS AND NOTES.

The proposed arrangements contemplate the sale of the undeveloped water power on the St. Maurice Rivers, P.Q., and the consolidation of the remainder of the assets of these three companies into a new company to be styled the St. Maurice Paper Company, Limited, which will be sufficiently financed to permit the erection of a newspaper mill, a sulphite mill and a kraft pulp mill, to be located at Cap Madeleine, P.Q.

An arrangement for hydro-electric power has been entered into with the Shawinigan Water & Power Company adequate for the present proposed development, and also to provide for future enlargements.

Payment for the water power referred to above is to be made in cash, and the sum realized therefor will be taken into the treasury of The Union Bag and Paper Company in the United States.

The money received for the sale of the undeveloped water power on the St. Maurice River will enable the company to redeem, on January 5, 1916, \$375,000. six per cent notes which are not due until April 1, 1916. This represents the entire amount outstanding.

The company owns large tracts of woodlands surrounding the sites of the projected mills and also operates a ground wood mill on the ground, thus making it possible to secure its own ground wood for the manufacture of news. When the sulphite mill is completed, the company will have its own strong sulphite resources, thereby placing within its own reach all of the raw material necessary for manufacture.

The product of the kraft pulp mill will be largely for the consumption of the company itself.

FOREST NURSERIES.

The state of New York has planted on state lands, up to the end of 1914, over four and a half million trees, enough, at the rate of 1,200 trees per acre, to reforest nearly 3,800 acres of land. From the state nurseries there have been sold to private landowners, for reforestation purposes, over thirteen million trees, while more than two and a quarter million have been furnished free of charge to state institutions.

In Canada, similar work, though on a somewhat smaller scale, is being done by the provincial nurseries at St. Williams, Ont., and Berthierville, Quebec. Similarly, the Dominion Forestry Branch has a large nursery at Indian Head, Sask., and another is in process of preparation at Sutherland, Sask., from which nursery stock will be available during 1916. The number of trees shipped from the Indian Head nursery has steadily increased from over two and a half millions in 1910 to about three and three-quarter millions in 1914. These trees are distributed among farmers throughout the prairie provinces mainly for shelterbelts, woodlots and the embellishment of grounds around buildings.

OUR BIGGEST INDUSTRY.

Measured by number of persons employed, what is the country's biggest manufacturing industry? Lumbering, with its 48,000 saw-mills, its \$1,000,000,000 investment in these plants, and its employment of 605,000 men. This does not include, says The Nation's Business, the standing timber, which brings the total investment to \$2,500,000,000. This industry furnishes railroads a traffic income of \$200,000,000 a year. Yet lumbering is one of the most depressed of industries, and seems to be the victim of its own helplessness because of uncontrolled competition. In the yellow pine industry, which comprises more than half the lumber production, chaos has resulted from ouster proceedings of the Missouri Supreme Court, bringing prices down 35.75 per cent. The past few years have entailed an estimated loss to labor, carrier and manufacturer of \$89,000,000.—Wall Street Journal.

PAPER PRICES ADVANCE IN NORWAY.

According to press despatches the prices on all sorts of paper in Norway have gone up thirty to forty per cent and are still on the increase. Some sorts cannot be manufactured by the Norwegian paper mills, as, for instance, blue paper, for want of blue dye-stuff, which is usually supplied by Germany. So many foreign factories have had to stop because of the war that prices on the products from the Norwegian plants have gone up—on cellulose from \$40 a ton before the war to \$70 a ton now.

JAPS CONSERVE FORESTS.

Japan exports more timber products than it imports. Corea and parts of China and Europe, Australia and the United Kingdom consume most of the lumber exported, although the United States takes large quantities of oak. The large timbers used in Japan come from the Pacific Northwest of Canada. Conservation methods work successfully in Japan, and complete reforestation of denuded areas can be accomplished in from 80 to 100 years. Reforestation was commenced in Japan about 30 years ago, and the system is now nearly complete.

GREAT NORTHERN PAPER CO.

Various rumors have been afloat to account for the steady rise in Great Northern Paper stock to its present level of 250, which means that as a 10 per cent dividend payer it is selling on a 4 per cent income basis. The stock early in the year ruled around 150, so that the last 12 months have seen an appreciation of \$100 per share.

One story has been that the company was to be acquired by other interests for the object of consolidation. Another rumor has had to do with a probable stock dividend. There is nothing in the consolidation story and so far as a stock dividend is concerned, there is no present chance of a distribution.

Great Northern Paper is, however, the second largest newsprint mill in the United States, with an output substantially more than 600 tons per day, and it is a strong earner. The 10 per cent dividend does not by any means measure the equity for shareholders and recognition of this fact partly underlies the high prices ruling for the shares.

The company has retired 40 per cent of its bonded debt through sinking fund or anticipated sinking fund operations and is fast heading up for the time when the entire property will belong to the owners of the \$6,000,000 stock.—Boston News Bureau.

A FOREST PROTECTOR.

"It is my belief, and I venture to assert it," declared the lecturer, raising his voice, "that there isn't a man in this audience who has ever done anything to prevent the destruction of our vast forests." A rather timid-looking man quietly arose in the rear of the hall and said: "I—er—I've shot woodpeckers."

HOW JAPAN FIGHTS FIRES.

Patrol methods are followed in protecting Japanese forests from destruction by fire, a ranger's district covering from 5,000 to 6,000 acres. Volunteers fight the fires. When areas are cleared for reforestation, lines of about 40 yards in width are left open, and kept clear to prevent the spread of fires. In Japan there are seven major forest districts, and within these are 205 sub-divisions, all under comprehensive control. Areas may be cleared for farming, but in Japan the farm units are small, averaging only three acres for each farm.

CHRISTMAS TREE TRADE.

The last shipment from Glen Falls, N.Y., of Christmas trees and green boughs has been sent to New York City for the coming holiday season, and it is estimated that the financial return will be in excess of \$1,000,000. The season has been an unusually good one, there having been a large demand for trees.

PAPER SHIRTS FOR SOLDIERS.

Paper shirts, made in Japan, are now being served out to the Russian soldiers for use in the cold and wet weather. A number of these paper shirts were used by the Russians last winter, and they proved to be much warmer and cheaper than ordinary shirts. The paper is made from the bark of the mulberry tree. It has been used by the Japanese army and people for many years. Its only drawback being that it cannot be washed.

FIRE AT PLANT OF THE MARTIN CORRUGATED PAPER BOX COMPANY.

The plant of the Martin Corrugated Paper Box Company, Toronto, was completely wiped out by fire on the night of December 24. There was no one in the building at the time and how the blaze originated is a mystery. The loss on building and contents is about \$100,000, partially covered by insurance. Owing to the inflammable nature of the contents of the factory there was no hope of saving the structure, which was a large one-storey one, well situated on the G. T. R. tracks, just east of Pape avenue. The company will rebuild at once, but meanwhile some eighty hands are thrown out of employment. The past year had been the best on record for the Martin Corrugated Paper Box Co., and the fire came at a particularly unfortunate time, for the firm had many large orders to fill.

PAPER MEN WAIT ON PREMIER.

A delegation of prominent business men headed by R. A. McCrae M.P. for Sherbrooke, visited Premier Gouin a few days ago. Among the members of the delegation were officials of the Laurentide company and Brompton Pulp and Paper Company. It is believed that the visit had to do with Sunday closing.

A law has been on the statute books for a number of years prohibiting Sunday operation, but industrial plants were operated on that day up to last week, when a government edict went forth. It is understood the delegation let it be understood that a strong fight would be made against the enforcement of the law, declaring it would mean heavy losses.

AN INTERPROVINCIAL ISSUE.

The flooding of land in Quebec by the dam of the Abitibi Pulp and Paper Company, which raised the level of Lake Abitibi, sent Hon. Jules Allard and Hon. Walter Mitchel, members of the Quebec Government, to Toronto a few days ago to suggest improvements. The Quebec Ministers conferred with Hon. W. H. Hearts and Hon. Finlay Macdormid, pointing out that the height of the Abitibi company dam had backed up the river over a considerable stretch of country. The Prime Minister assured them that the flooding would not be repeated. This will be done by regulating the height of the dam.

TO AID LUMBERMEN.

Government aid for the Canadian coast lumber industry is planned in a bill to be introduced in the next British Columbia parliament providing for construction of a great fleet of lumber carrying ships. The bill will have government support, and will provide a bond issue for building twenty vessels of 2,000 tons each. Such a fleet would more than triple export facilities for Canadian Pacific lumbermen.

The Canadian government already has put an agent in London to aid in marketing the expected increase in Canadian lumber shipment.

IMPORTS OF PULP INTO ARGENTINA.

The importation into Argentina of pulp and paper comes from the following countries of origin: United States, Canada, Norway, Germany, Sweden, Finland. The total annual production of these countries is 4,628,000 tons of pulp, 2,316,000 tons of the total being mechanical pulp, and 2,312,000 being chemical pulp.

WATER PROOFING VS. MOISTURE PROOFING.

A very interesting series of tests have been made in the Research Laboratory of the Beaver Board Company at Buffalo, N.Y., in connection with the respective merits of Water Proofing vs. Moisture Proofing. The experiments covered the past several years, the idea being to get a material which would protect pulp board from the absorption of atmospheric moisture. In one case liquids of a nature of varnish were applied in order to make the article moisture proof. It is found that if these be applied heavy enough a pulp board is rendered more or less impervious to water, but a large percentage of them broke down when subjected to atmosphere containing a high percentage of moisture. It was shown that water in a gaseous state, as in the atmosphere has a different effect from water in a liquid state. The conclusion of the series of experiments was that it does not follow that because a stock is able to repel water or ink it is also able to repel atmospheric moisture.

CO-OPERATIVE INSURANCE FOR LUMBERMEN.

At the recent convention of lumbermen of the Prairie Provinces and British Columbia, held at Calgary, the formation of a lumberman's co-operative insurance company was urged upon the delegates.

Speakers pointed out the disadvantage of the present method of insuring with the regular insurance companies, showing how the lumbermen, if they worked together, could get insurance at cheaper rates, and saying that such a cooperative company could protect better against fires by the fact that the lumbermen and their employees would probably take a greater precaution against fire on account of having a personal interest in the company which assumed the risk of fire loss.

UNION BAG AND PAPER COMPANY.

The President of the Union Bag and Paper Company has announced that the company will immediately build a newsprint mill, a sulphite mill, and a kraft pulp mill at Cap Madeleine.

John S. Riegel president of The Union Bag and Paper Company announces that certain financial arrangements have been consummated in respect to such of the Canadian properties of the company as are included in the ownership of their three subsidiary companies, viz.: The Gres Falls Company, St. Gabriel Lumber Company, Limited, and the Charlemagne and Lac Ouareau Lumber Company.

JAPANESE PAPER MAKING TOWN.

Atami, a pretty town in Japan, is famous for the manufacture of paper. This paper is so fine that it is used for handkerchiefs and napkins, yet so firm that it can be manufactured into air cushions, so soft that it is used for lint in bandages, yet so strong as to be used for lanterns and screens and durable umbrellas.

PARTINGTON COMPANY TO EXPAND.

The Ed. Partington Pulp and Paper Company of St. John, N. B., propose to increase the capacity of their sulphite mill to 75 tons per day, they are at present manufacturing from 40 to 50 tons per day.

They are now closing arrangements for a complete new acid system to take care of their increased capacity. The market for bleached pulp is extremely good at the present time.

WOOD-PULP INDUSTRY OF TASMANIA.

FORESTS AND MOISTURE.

For a number of years the Tasmanian Government has been considering the development of a wood-pulp and paper industry to take advantage of its forest and water-power resources and to supply the Australian market. Several resident and English engineers and analysts had reported rather favorably on the prospects and certain State-aided, as well as Government-owned, plants were lately in course of promotion. Before appropriating large sums of money and alienating public lands for these projects, the more conservative members of the Government suggested that an independent investigation be made, and Mr. Henry E. Surface, of the United States Forest Service, was invited to Tasmania for this purpose. The results of his investigations are thus discussed by the *Launceston Weekly Courier*:

A great deal of optimism has been dissipated by the report of Mr. Henry E. Surface, consulting engineer in forest products, Madison, Wis. (U. S. A.), on the possibilities of converting Tasmanian forest timbers into pulp for paper making. The point of the expert's decision is that it is not a practicable scheme; in fact, our woods are not as suitable as some of our nonexpert enthusiasts have been proclaiming. Mr. Surface examined myrtle (or beech), swamp gum, blue gum, and stringy bark, but found that their manufacture into pulp for sale would not be a feasible enterprise from the profit standpoint under the present or even under normal conditions. While the manufacture of the woods into pulp and then into paper could yield a profit under very favorable conditions, yet, he stated he could not consider it a sound industrial venture and surely not an attractive one.

The main difficulty lies in the woods themselves. Their hardness, natural color, and comparatively short fiber confine their possible use to only one class of pulp, "soda pulp," with a limited usefulness for paper making in general. The comparatively small yield of paper-making fibers that might be obtained from these woods means a comparatively high cost of manufacture. The report unfortunately is distinctly against the venture. At this there will be a general disappointment. All the high hopes that have been built up concerning a vast wood-pulp industry in this State will now be laid aside as this expert report may be said to have obliterated the prospect of any enterprise in that direction. The small samples of good paper that have been made from our woods were like the gold in some of our mines; the gold is there but it does not pay to take it out.

In certain world markets Tasmanian timbers are much prized for structural and ornamental work.

PULP AND PAPER NOTES.

The Three Rivers Traction Company recently opened the extension line to Baptist Island, where the mills of the Wayagamack Pulp & Paper Co. are situated.

According to a notice in the press, W. C. Edwards & Co., Ltd., of Ottawa, is applying for authorization to increase its capital stock from \$400,000 to \$4,400,000.

McLachlan Bros., Arnprior, Ont., will probably either add a pulp and paper end to their business or sell out to some other firm that will make the purchase with that purpose in view.

Trees drink in and transpire an enormous quantity of water. This giving off tempers the dryness of the nearby atmosphere. Moisture bearing currents of air are caught by forest areas as they are not by the heated plains. Local showers may thus become more frequent where trees abound, or at least the availability of whatever may fall is increased for the locality by forest growths.

Foliage, twigs and branches break the fall of the raindrops. So does the litter on the forest floor. Hence the soil under this cover is not compacted as in the open field, but is kept loose and granular, so water can readily penetrate and percolate. The water reaches the ground more slowly, dripping gradually from the leaves, branches and trunks, and thus more time is allowed for it to sink into the soil and appear again in springs or subsoil moisture lower down.

In forests there is much less evaporation of moisture than in the open country because sun and wind do not have such free play. It is estimated that forests have from 50 to 60 per cent of water supply more than the open fields because of increased percolation and decreased evaporation.—Country Gentleman.

AMERICAN WRITING PAPER.

In all probability American Writing Paper directors will decide to pay the Jan. 1 interest on the \$17,000,000 5 per cent bonds. It will be recalled that the July 1 interest was defaulted, that a couple of committees, one representing the bonds and the other the stock were formed and that suddenly, early in August, the default on the bonds was cured by a vote to pay the interest, taking funds from the treasury for the purpose.

The real reason that the default was cured was, of course, because stockholders and bondholders were too far apart in their ideas of scaling capitalization in reorganization.

The company's earnings have improved decisively during the last three months. Current operations are at around 90 per cent against 70 per cent back in September and less than that in July. At the same time interest and sinking fund charges this year will not be earned by between \$200,000 and \$225,000.

Sooner or later American Writing Paper will be re-capitalized, but it will be on an ascending scale of earnings instead of during a severe depression as would have been the case in the middle of this year.

AUSTRALIA NEEDS LUMBER.

That Australia needs lumber is shown by certain bulletins issued for the United States Government by its representative in the far east, stating that as the native woods are too hard for proper working the Antipodes are searching for outside lumber with which to build, and every effort will be made by the United States to introduce and make popular, the bungalow style of building in Australia, with the ultimate view of introducing, as well, a big lumber trade with that country. This should be brought to the notice of Canadian firms handling various kinds of Canadian woods, as there is no reason why Canada should not control the lumber trade to Australia instead of the United States. In normal times the imports of lumber into Australia are valued at \$13,000,000.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine.)

New York, Dec. 31, 1915.

"Owing to conditions now existing relative to raw materials entering into the manufacture of paper, especially colored papers," announces the American Writing Paper Co. "we find it necessary to advance the price of all grades of colored writing papers. The cost of coloring is still going up, and several colors cannot be obtained. We are, therefore, advancing our colored writings, to take effect at once, as follows:

"Colored writings, bonds, ledgers, linens, envelope and mineograph papers one-half cent per pound, except Goldenrod, which is advanced one and a half cents per pound. This advance is to apply on all orders from stock. We will accept any special making order on condition that we are able to obtain the coloring matter, and will be pleased to quote at any time lowest possible prices on all individual inquiries."

* * *

Whittier & Callahan are the contractors in charge of the erection of the new 75-ton daily capacity of the Northwest Paper Company at Brainerd, Minn. The building will occupy a plot 80 x 410 feet on a water power site. It will be of brick and concrete construction, and will cost \$400,000. Eight pulp grinders are included in the machinery equipment.

* * *

Representatives of industries affected directly or indirectly by the shortage of dyestuffs convened in New York City on December 15 to discuss the advisability of sending a delegation to Washington to take up the matter of relieving the situation with Secretary Lansing and President Wilson. The meeting was called by the National Association of Clothiers and members of many other trade organizations were present.

* * *

The sale of the plant and holdings of the Katahdin Pulp and Paper Company at Lincoln, Me., to the Eastern Manufacturing Company has been completed. The Eastern has controlled the Katahdin Company for some time through the purchase of the stock, but now the entire property is transferred to the Eastern. The price paid for the property as shown by the revenue stamps on the deed was \$570,000, the revenue tax amounting to \$570.

* * *

The New York State Forestry Association will hold its fourth annual meeting in Syracuse on January 21, 1916. It promises to be one of the most important and exciting meetings yet held by this organization.

* * *

The mill of Peters Paper Company, at Latrobe, Pa., was recently damaged to the extent of \$80,000 by an explosion. The company has been engaged in the manufacture of roofing paper for use in the trenches on the western European battle front.

The Taylor-Atkins Paper Company of Burnside, Conn., has filed a certificate showing an increase of capital stock from \$50,000 to \$150,000. The number of shares is proportionately increased from 500 to 1,500, the par value being \$100 per share.

* * *

The Odell Mfg. Co., 291 Broadway, New York, has issued notice relative to price changes:

"Please be advised that we are to-day revising our prices on Kraft to read as follows:

35-pound basis and heavier .. \$3.25 per cwt.

30-pound basis and heavier .. 3.50 per cwt.

25-pound basis and heavier .. 3.75 per cwt.

Delivered in cars up to and including a 20 cent freight rate, usual terms. If your files do not contain samples of various weights in this grade, kindly advise us, and same will be forwarded promptly."

* * *

The Downingtown Manufacturing Company of East Downingtown, Pa., has arranged with J. and A. Jensen og Dahl, of Christiania, Norway, to manufacture under their license the line of pulp mill machinery. The company is also acting as their sole selling agents, and are not prepared to submit estimates on this line of machinery.

* * *

The Union Bag and Paper Company, in order to standardize still further its production—in weight as well as quality—will hereafter distinctly mark, on each shipping bale of paper bags the guaranteed scale weight.

* * *

Thomas H. Savery, Jr., formerly with the Pusey & Jones Company, of Wilmington, Delaware, and recently with the Sandusky Foundry & Machine Company, of Sandusky, Ohio, has established himself in business at 807 Adams street, Sandusky, Ohio, as a manufacturer's representative, selling special machinery for pulp and paper mills.

* * *

The Battle Island Paper Company, of Fulton, N.Y., has completed the presentation of its claim for \$1,850,000 damage, against the State of New York. The case has been adjourned until January 10, when the State will present its side. The attorneys for the State have vigorously contested most of the claims of the company.

* * *

The writing Paper Manufacturers' Association of 18 East Forty-first Street, New York, held a meeting at the Hotel Statler, Buffalo, N.Y., on Friday, December 17. The Cover Paper Manufacturers' Association also met at the same place on Thursday, Dec. 16.

PULP AND PAPER NEWS

Toronto, Dec. 29, 1915.

The United Paper Products Co., Limited of Vancouver, B.C., have been granted a federal charter. The capital stock of the company is \$100,000 and among the incorporators are Richard S. Kyle, Alex. W. Young, and Roy S. Davis, of Vancouver. The company have wide powers and may do a general printing, engraving and lithographing business, as well as cut, manufacture, sell, export and import all kinds of timber logs, lumber and lumber products and all articles manufactured from lumber and also pulp and paper products.

J. G. Gaudaur, former sculling champion of the world, who now resides at Atherly near Orillia, is the "General" of the Hartley Bay Hunting Club, of which I. H. Weldon, President of the Canadian Pulp and Paper Association, is President. The club generally hold their annual hunt on the French river, and a few nights ago Mr. Gaudaur was the guest of honor at a banquet tendered him by the President of the National Club, Toronto. The veteran oarsman was in fine fettle and made a reminiscent speech, at the close of which he presented Mr. Weldon with a mounted rabbit's head as a mark of appreciation.

Many friends in the paper trade will regret the passing of T. G. Wilson, senior partner of the wholesale paper firm of Wilson, Munroe Company, Toronto, who died at his home in Oakville, Ont., on December 20. Mr. Wilson contracted bronchial pneumonia. He had not been in good health for some time past but came to business every morning, returning to Oakville early in the afternoon. This he continued to do until ten days before the end came. The deceased was a man greatly respected for his work and worth, and in all relations of life set a high standard. He was born in Edinburgh, Scotland, and when twenty-five years of age, came to Canada.

The Ontario Government has appointed a fire marshall for the province in the person of E. P. Heaton, of the firm of Heaton and Weir, Toronto, at a salary of \$4,000 a year. Mr. Heaton is one of the expert insurance men of the province. Legislation was passed last year for the creation of this position and the duties of the new official will be to investigate the cause, origin and circumstances of all fires occurring in the province, the gathering of records and statistics as to fire waste, and the adoption of whatever measures may be considered necessary toward lessening fire dangers. The act makes provision if necessary, for the appointment of deputy marshalls in centres of importance throughout the province.

Among the members of the Canadian Business Men's Luncheon Club, which has been formed in London, England, and holds gatherings every fortnight, is the

Laurentide Company. New and most promising openings for Canadian exports to Great Britain, Russia, France and elsewhere are being looked for after the war.

A winding-up order has been granted for Patent Twines, Limited Toronto, and Harry Vigeon has been appointed liquidator. This company was formed a couple of years ago and a number of paper men put some money into the enterprise, its success being militated against by the outbreak of the war and other causes.

York Paper Box Company, Limited, 559 College street, Toronto, have recently been incorporated, with a share capital of \$40,000. The company are empowered to manufacture and deal in all kinds of paper, pulp, envelopes, pulp board, paper boxes, corrugated shipping cases, etc., and to carry on a general printing business.

A. M. Barkwell, who is manager of the Winnipeg branch of McFarlane, Son and Hodgson, paper dealers, Montreal, spent a few days in Toronto and Montreal recently on business. He reports business in the west as greatly improved.

H. M. Thorne, secy-treas. of the Canada Paper Co., Montreal, spent a few days in Toronto recently, calling upon the trade.

A charter has been granted to the Wood Products Company, Limited, with headquarters in Toronto, and a share capital of \$100,000, to engage in the destructive distillation of wood, to carry on the manufacture and sale of charcoal etc., and to conduct business as timber merchants, deal in timber limits and concessions and to build and operate pulp and paper mills.

Some new regulations have been made by the Workmen's Compensation Board respecting the industries under the Compensation Act which has now been in operation for a year. All the building trades have been grouped into one class. The regulations provide that employers must send in their next annual payroll statement by January 10. It is likely that the assessment on several industries will be lowered as the first year's levy was largely tentative. Among those firms, which expect a substantial reduction in the amount which they have to pay in, are the pulp and paper mills of Ontario.

I. H. Weldon, President of the Provincial Paper Mills Co., Limited, Toronto, spent Christmas with his parents at St. Thomas, Ont. His father, James Weldon, is still hale and hearty at the advanced age of ninety-three and has enjoyed some sixty-three years of married life, a most remarkable record.

A charter has been granted to Lindsay Woodworkers, Limited, with a capital stock of \$40,000 and head offices in Lindsay, Ont. Among the incorporators are James A. Peel, Robert A. Pogue, Newton Smale and John F. Maunder, all of Lindsay. The company is empowered to manufacture and deal in all kinds of lumber, logs and wood, and to purchase and lease timber licenses and limits. Another concern, which has just obtained a charter, is George McAllister and Sons, Limited, of Guelph, with a capital stock of \$40,000, to manufacture lumber and woodenware, to buy timber limits and lands, and to carry on in all its branches a pulp, wood and cooperage business.

The taxes paid by the Spanish River Pulp and Paper Mills, Limited, in Sturgeon Falls, Ont., will go to the Public School Board. Decision on this matter, which has been hanging fire for some months' was given out recently by the Ontario Railway and Municipal Board. A similar judgment was handed down a few days previously in favor of the Public School Board of Fort Francis, Ont., it being held that the public schools of that town, were entitled to the full assessment, in the case of the Ontario and Minnesota Power Co., and the appeal entered by the Roman Catholic Separate Schools was dismissed.

The Riordon Pulp and Paper Co., Montreal, have declared their regular quarterly dividend of one and three-quarter per cent on the preferred stock of the Company.

The many friends of A. M. Huestis, the widely known paper mill representative of Toronto, will sympathize with him in the death of his mother, who passed away on December 22. She was the wife of the Rev. Dr. S. F. Huestis, formerly of Halifax, and at one time publisher of the "Wesleyan." Her maiden name was Louisa F. Archibald, and she had attained the ripe age of eighty years.

The Toronto Paper Mfg. Co., Limited, of Cornwall, has sent out to its customers an interesting and useful diary, bound in green leather, and entitled "Dairy Reminder." The book contains tables of interest, rates of postage, and other useful information in succinct form.

The Ontario Pulp and Paper Makers' Safety Association, who, for some time, have been considering the appointment of a Safety Engineer, to see that all proper measures of protection are taken under the Workmen's Compensation Act, and that every modern device is adopted to guard against accidents to employes, have made a selection in the person of A. G. Pounsford, of Canton, North Carolina. Mr. Pounsford is a graduate of Cornell University, and comes highly recommended. He will enter upon his new duties about the first of April. At the recent national convention of Safety Engineers in Philadelphia, he took a leading part in the proceedings. He has had extensive experience in the work, and is in every way well qualified for his important duties. W. P. Gundy is Chairman of the Ontario Pulp and Paper Makers' Association, and H. D. Scully, of Toronto, Secretary.

The F. N. Burt Co., Limited, of Toronto, has just declared a quarterly dividend of one and three-quarters per cent on the preference stock of the company, and one per cent on the common. The Pacific-Burt Co., Limited, have declared a dividend of one and three-quarters per cent on the preference stock, and a half yearly dividend of one per cent on the common shares of the company.

In connection with the recent plot to blow up the Welland Canal, which was discovered in New York City, and led to several arrests for conspiracy, the pulp and paper manufacturers of the Niagara Peninsula are deeply thankful that the scheme was frustrated, as it might have resulted in the closing down of their industries for a very long period.

The plant of the Canadian Pulp and Lumber Co., at Latchford, Ont., has been closed down for the winter and the offices of the company have been moved to Haileybury.

About 2¾ million acres of land in Great Britain are devoted to woods and forests.

Manitoba lost more than \$1,000,000 in damage to mature timber and young growth in 1915. The total area burned over was 800,000 acres, according to official reports thus far received.

An extensive plant has been built in Venezuela for the manufacture of wrapping paper and strawboard from an aquatic plant growing profusely in that country.

A factory for the manufacture of paper boxes will shortly be erected in London, Ont., by H. T. Reason.

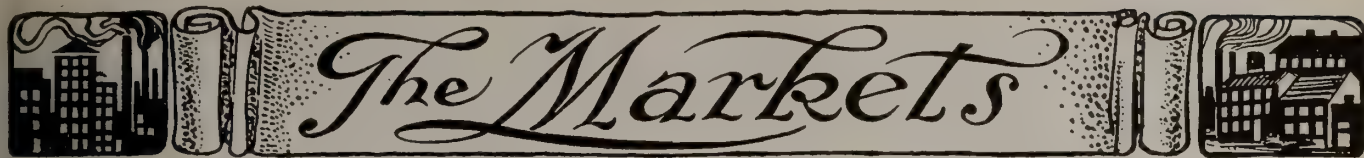
The Dominion Pulp Co. of London, Eng., have expressed their willingness to give their building at the Miramichi Pulp plant, Chatham, N.B., for use of the soldiers during the winter. They asked the town to look after the matter of insurance.

Over 200 men employed in the woods department of the Spanish River Pulp and Paper Company have enlisted for Overseas service.

The River Ouelle Pulp and Lumber Company, St. Pacome, P.Q., will take out 18,000,000 feet of logs this winter. Last winter they took out 19,000,000 feet.

Mr. Melander, Mechanical Draughtsman until recently employed with the Pulp and Paper Division of the Bathurst Lumber Company, has left for Lindsay, Ont.

The immense pulp works at Murray, St. Ann's, Victoria County, erected by the Cape Breton Lumber Company, is nearing completion, and will be ready for the installation of the machinery in a few days.



The Markets

CANADIAN MARKETS

The closing month of 1915 finds all the mills busy, and the outlook for the coming year encouraging. Business in every line of the paper and pulp trade is far more promising in both volume and prospects than it was twelve months ago. News print is firmer in price and the demand keeps up steadily. Many representatives of foreign countries are in New York and other cities seeking to place orders with Canadian and American plants for shipments abroad. One leading Canadian mill reports an increase of four dollars a ton on new contracts, and the big plant of the Abitibi Power and Paper Co. is now turning out two hundred tons of news print daily. The output is sold up for a considerable time. This is remarkable in the case of a new plant of such magnitude within such a short time, and affords the student of market conditions some conception of the firmness of things in general.

The one fly in the ointment is the scarcity of colors of all kinds. Some Canadian dailies are now showing the yellow or creamy tinge, owing to the absence of dyes and the sparing use which is being made of them by the mills, a few of whom have only a decidedly limited quantity on hand. They do not know where to turn in order to get ultra marine blue, logwood crystals, etc., which are practically off the market, with prices really prohibitive. An advance of another quarter of a cent on colored bond and book papers went into effect during the past week. Book, writing, linen and similar lines of paper are in good demand, and mills are busy—for the first time in many months. One large plant is sold up for two months ahead, and will take no orders for delivery before March.

With the betterment of business conditions generally more catalogues are being issued, and printing establishments are active. One large firm alone accepted contracts for six catalogues during the past week.

Sulphite pulp is still soaring, and where the figure will get it is impossible to tell. Contracts have been made during the past few days for No. 1 easy bleaching at fifty dollars per ton at the mill, which is almost a record value. All orders are for immediate delivery. It does not look as if Scandinavian mills can, or will come to the rescue. Some producers are talking of a figure as high as sixty dollars at the mill before March 1st. Inquiries continue to pour in from large consumers, and the market is really a sellers one. Buyers now come to the mills instead of the sales agents going to the trade.

Kraft pulp is quoted at forty-seven and forty-eight dollars. A large export business is being done in this line of paper, one wholesale house receiving an order during the past few days for five hundred tons of unglazed kraft at five cents. The advance in sulphite pulp and rags will result in the best grades of linen and bond papers going still higher. In addition to the advance quoted in the last report, light weight kraft in rolls has jumped a quarter of a cent, and the better grades half a cent and another revision in quotations is confidently expected at the beginning of the year, along with increases on Bristols, cover papers, poster paper, toilet and tissues.

Coating paper plants are rushed, and concerns are running night and day, which is a state of affairs unknown for some time. Specialties have gone up from a cent to a cent and a half per pound, and business with the wholesale houses during December has been a record one.

Mills and jobbing concerns will be busy during the next few days in stock taking, and making inventories preparatory for the annual meetings, which are scheduled to come off within the next few weeks.

The rag market is firm, and prices are maintained at a high level. There has been some easing off in roofing stock, but there has been an advance in shavings and in book stock. It is expected that the prices for shavings and kraft will go higher. Dealers generally look forward to a much better year in 1916 than during the one just ending. Reports from mills are to the effect that the demand will continue until April next, at any rate. One great trouble is the scarcity of stock and the low prices paid by the mills for the first few months of 1915. Merchants, manufacturers and others, who had been in the habit of saving and packing waste paper, figured that the prices offered them by the dealers, did not begin to repay them for the trouble of saving, and whole car loads were burned. Now dealers are trying to persuade such persons to resume saving their stock, as, at present, there is not nearly enough of the cheaper grades in the country to meet the requirements of the mills. The latter did not make nearly as much paper the early part of 1915 as usual, and this has been a contributing cause to the present shortage, for unless paper is manufactured, there cannot be sufficient paper stock.

Quotations f.o.b. Toronto, are:—

Paper.

News (rolls), \$1.95 to \$2.05 at mill, in carload lots.
 News (sheets), \$2.10 to \$2.20 at mill, in carload lots.
 Book papers (ton lots), 4.25c. up.
 Book papers (carload), No. 3, 4.00c to 4.25c.
 Book papers (carload), No. 2, 4.50c.
 Book papers (ton lots), No. 2, 4.75c to 5.50c.
 Book papers (carload) No. 1, 5.00c to 5.50c.
 Book papers (ton lots), No. 1, 5.50c up.
 Sulphite bonds, 6½ to 8c.
 Writings, 4½c up.
 Grey Browns, \$2.50 to \$2.75.
 Fibre, \$3.35 to \$4.00.
 Manila, B., \$2.85 to \$3.50.
 Manila No. 1, \$3.35 to \$4.00.
 Manila, No. 2, \$3.25 to \$3.75.
 Unglazed Kraft, \$4.50 to \$5.25.
 Glazed Kraft, \$4.75 to \$5.50.

Pulp.

Ground wood pulp (at mill), \$16 to \$17.
 Ground wood \$19 to \$23, delivered.
 Sulphite (unbleached), \$48 to \$50, del. in Canada.
 Sulphite (unbleached), \$48 up, delivered in U. S.
 Sulphite (bleached) delivered, \$65 up.
 Sulphate, delivered, \$47 to \$48.

Paper Stock.

No. 1 hard shavings, \$2.30.

No. 1 soft white shavings, \$1.85.
 White blanks, \$1.00.
 No. 1 book stock, \$1.00.
 No. 2 book stock, 65c.
 Ordinary ledger stock, \$1.25.
 Heavy ledger stock, \$1.65.
 No. 1 Manila envelope cuttings, \$1.05.
 No. 1 print Manilas, 60c.
 Folded News, 45c.
 Over issues, 50c.
 No. 1 cleaned mixed paper, 37c.
 Old white cotton, \$2.40.
 No. 1 white shirt cuttings, \$5.25.
 Black overall cuttings, \$1.60.
 Thirds, blues, \$1.60.
 Black linings, \$1.60.
 New light flannelettes, \$3.75.
 Ordinary satinets, \$1.70.
 Flock, \$1.80.
 Tailor rags, \$1.70.
 Blue overall cuttings, \$3.75.
 Manila rope, \$2.65.
 No. 1 burlap bagging, \$1.35.

Quotations f.o.b. Montreal remain unchanged, and are as follows:

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$45. to \$50 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders; \$50 to \$60 per ton for small orders.
 No. 1 Book, 5¼c to 5¾c per lb.
 No. 2 Book, S.C., \$4.50 to \$4.75 in large quantities; \$4.75 to \$5.50 in small quantities.
 No. 3 Book, M.F., \$4.00 to \$4.25 in large quantities; \$4.40 to \$4.50 in small quantities.
 Writings, 5c to 7½c.
 Sulphite Bond, 6½c to 8½c.
 Writing Manila, 5c.
 Cover Papers 6½ to 10c. per lb.
 Colored Posters, 4½c to 5½s per lb.

Wrappings.

Grey Brown, per 100 lbs., car lots, \$2.25 net; 5 tons \$2.45; 2 tons, \$2.55; 1 ton, \$2.65; less, \$2.75.
 B. Manila, car lots, \$2.85, less 5 per cent; 5 tons, \$2.95; 2 tons, \$3.05; 1 ton, \$3.15; less \$3.25.
 No. 2 Manila, car lots, \$3; 5 tons, \$3.20; 2 tons, \$3.30; 1 ton, \$3.40; less, \$3.50.
 No. 1 Manila, car lots, \$3.35; 5 tons, \$3.45; 2 tons, \$3.55; 1 ton, \$3.65; less \$3.75.
 Kraft, \$3.75 to \$5.00.
 Fibre, car lots, \$3.35; 5 tons, \$3.45; 2 tons, \$3.55; 1 ton, \$3.65; less, \$3.75.
 Fibre, \$2.75 to \$3.50.
 Manila, B., \$2.50 to \$3.25.

Pulp.

Sulphite easy bleaching, \$43 to \$45 per ton.
 News quality, \$39 to \$40 per ton.
 Bleached sulphite, \$54 to \$59 per ton.
 Ground wood, \$20 to \$23, delivered in United States.
 Kraft Pulp, \$39 to \$40.

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine.)

New York, Dec. 26, 1915.

Marked improvement has been reported in the interest in mechanical ground wood pulp. Many of the rivers throughout the upper part of New York State

have already frozen, while the others are at low water, thus depriving the news mills of the power for operating their grinding machines. The large stocks of ground wood which were stored during the summer are now diminishing rapidly, making the outlook rather encouraging for the grinder of pulp. The inquiry for export continues fair, and acts as a stimulus for the market. Prices are tending to firm.

The market for chemical pulp seems leading for a most unusual situation. Never before in the history of the industry have similar conditions existed. At present, it is only with great difficulty and after considerable scouting that one can get in touch with any available supplies of pulp, and then it can be had only after the payment of what would ordinarily be considered prohibitive prices. And yet, it is predicted by men in the trade, whose foresight cannot in the least be questioned, that the present prevailing prices will be considered reasonable within a few months. There is an actual scarcity of all kinds of chemical pulp. Imports for this time of the year have been rather of no consequence, for the closing of navigation on the Baltic Sea is about due now. It is usual at this season for large shipments to leave the Swedish mills prior to the shutting down of navigation, so as to leave enough stock in this country to last over the winter. This year, however, if all of the contract stock comes over, it will be considered quite fortunate. The cost of manufacturing pulp has gone up so tremendously that the producer who is trying to fill old contracts can only do so at a loss. Thus far, many of the makers have been honorable enough to stand their losses, making the deficit on new business being secured abroad. This was possible because of the very high prices being paid by the English and the Germans. However, it is rather problematical as to whether some of these mills will be able to continue long in this way. Raw materials have shown absolutely no inclination to ease up in the slightest degree. On the contrary, they are constantly getting stronger and, as long as the war lasts, it appears that there will be no room for hope of any relief. Sulphur is scarce on the other side, and owing to the shortage of shipping facilities, it is practically impossible to send over all the stock that is needed. Coal is hard to get. Many of the mills are now feeling the coal shortage, and some have already been compelled to shut down because of their inability to get sufficient supplies. Bleaching powder has gone up without precedent. At the time of this writing, the market here in New York City, for bleaching powder, is quoted at 8 to 9c, not only for spot shipment, but also for contract over the coming year. And even at these figures, it is a problem to secure any large quantities of stock. The action of this market has so severely reflected on bleached sulphite that it seems only a question of a short time before it will be selling at 6c, and be scarce at that price. Predictions that a famine will follow are being freely made. A great demand has come into existence for easy bleaching, caused undoubtedly by the bleached situation, for many paper makers have resorted to the use of easy bleaching in place of the bleached sulphite. However, there is no great quantity of easy bleaching to be had, and prices have already soared to \$2.65 or \$3.10 on this commodity. The fact that the production of easy bleaching has been increased a little has made absolutely no impression

on the state of affairs, now prevailing. Krafts appear to be hopeless, i.e., to the man who is trying to secure any amount of stock. The fact is that prices being named at the present time are actually only nominal, for there is almost no pulp of this kind available. A representative of a large South American concern was in the city during the week to get as much kraft as he could get. His inquiry scoured the city, with an offer to pay whatever was asked, and there were few, indeed, who could even help him a trifle. Conditions in this particular market are expected to reach a most acute stage in another month or so. Unbleached sulphite is constantly getting firmer, the better grades now selling at \$2.40 to \$2.60. It is hardly likely that any relief for these conditions will be seen for some time, and that those who are not covered for pulp will find it rather difficult to get sufficient supplies to keep operating at capacity.

Rags have just shown a tendency to ease off a little. This is due, undoubtedly, to the fact that the inventory season is now in progress among most of the large manufacturers of rag papers, and that they are not buying any additional stock while this is going on. Some paper makers have even issued orders to hold off deliveries until after the first of the year, so that their inventory sheets would not show too much on hand. However, prices have not changed at all, i.e., they have not lowered. Dealers and packers are holding to their high figures and have, in some cases, even asked more for their stock. Everyone is confident that the coming year will be a busy one, and that the demand for rags will be better than ever before. The fact is that a general advance is expected after the end of the month. It is believed that the mills are not over-supplied with rags, and it is known that they are nearly running at full capacity, consuming large quantities of stock. While the roofing mills have practically receded from the market, it is thought that they are waiting for much lower prices to prevail. There is not an oversupply of rags in this country, nor are there any possibilities that we will have any such over-supply for some time. Collections have been comparatively poor, and the imports from abroad are far below the normal shipments. Summing the conditions in this market, there seems little else for the future than higher prices and bigger demand.

Bagging is continuing in fine shape. Gunny is very active, and has already reached a high mark of 2 to 2¼c. Bright bagging is being quoted at 1.85c; sound bagging at 1.65 to 1.70c; mixed bagging at 1.50c; Manila rope is also in very good demand, and cannot be had for less than 3 to 3.25c.

The paper market has been very active, and looks as though it will continue in this way for some time. Prices have been going higher all along, because of the exceedingly high costs of raw materials, and the difficulties in getting some special grades of pulps and chemicals. Reports from the mills all over the country show that they are all running to capacity, and that they have orders enough on hand to keep them in this condition for two months, and even more ahead. Jobbers have been kept busy and are buying more liberally than before. In fact, the general talk of further price advances has gone about the trade, and is now working its results in large orders ahead. However, the mills will not specify delivery on any orders taken now. The freight problem has not changed to any great extent since the issue of our last market report. Shipments have been held up for many days

over the ordinary time for delivery, and have caused considerable annoyance to both buyer and shipper. The railroads have further aggravated the situation by issuing embargoes, but have not in any way really alleviated conditions. At present, nothing very encouraging for the future can be seen in this connection.

Not in many years has there been such a good demand for newsprint. Reports show that this market is practically over-sold, and that the usual surplus is now almost out of sight. In fact, several of the mills have been unable to fill contracts and have had to call on one or two others who were a little better situated, to help them out. Prices are holding very firm, but are not expected to go up very much. The fact is that the mill men are doing their utmost to hold off from advancing. Tissues are very strong, and advancing. Many of the mills have withdrawn their quotations, while others have raised their prices on present business. The future seems to hold very high prices in store. Manilas are very active and advancing. The mills making this paper are all operating at capacity. Fibres, too, are in great demand, and have advanced as much as 25c per 100 lbs. Krafts are very scarce, and can be had only at very high prices. Book papers have not changed materially. Boards are still active, with prices still at the high level.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$16 to \$17, delivered.
Ground Wood, No. 2, \$14.50 to \$15.50, delivered.
Unbleached Sulphite, dom., 2.30c to 2.85c, delivered.
Easy Bleaching, impt., 2.65c to 3.10c, ex-dock, N.Y.
Unbleached Sulphite, impt., 2.25c to 2.60c, delivered.
Bleached Sulphite, domestic, 2.95 to 3.15c, delivered.
Bleached Sulphite, impt., 3.75c to 4.50c, ex-dock, N.Y.
Unbleached Sulphite, impt., 2.15 to 2.50c, ex-dock, New York.
Bleached Sulphate, impt., 2.80c to 2.90c, ex-dock, N.Y.
Kraft Pulp, 2.40c to 2.70c.

Paper.

News, Rolls, transient business, \$2.10 to \$2.15, f.o.b.
News, Sheets, \$2.20 to \$2.35, f.o.b.
News, Rolls, contract renewals, \$2.00 to \$2.10, f.o.b.
News, side runs, \$2.00 to \$2.15, f.o.b.
Book papers, car lots, S. & S.C., \$44.00 to \$44.50, f.o.b.
Writing paper, extra superfine, 13½c to 17c, del. east of Miss. River.
Writing paper, superfine, 11c to 13c, del. east Miss R.
Writing paper, No. 1, fine, 9c, del. east Miss. River.
Writing paper, No. 2, fine, 8c, del. east Miss River.
Writing paper, engine sized, 5c to 8c, east Miss. R.
Bond paper, 5c to 24c, delivered east of Miss. R.
Ledger paper, 5c to 25c, delivered east of Miss. R.
Linen paper, 8c to 18c, delivered east of Miss. River.
Manila jute, 4¾c to 5c, delivered.
Manila, wood, 2.50 to 3.35c, delivered.
Kraft, No. 1, (dom.) 3.75 to 3.85c, f.o.b. New York
Kraft, No. 2, (dom.) 3.45 to 3.60c, f.o.b. New York,
Kraft, imported, 3.95c to 4c, ex dock, New York.
Boxboards, news, \$29.00 per ton, delivered.
Wood pulp board, \$40 to \$42.50 per ton, delivered.
Boxboards, straw, \$27.00 per ton, delivered.
Boxboards, chip, \$29.00 per ton, delivered.
Tissue, fourdrinier, 50c. f.o.b. New York.
Tissue, white, cylinder, 42½ to 47½c, f.o.b., New York.

NEW MILLS FOR NEWFOUNDLAND.

The Reid-Newfoundland Co. have in course of construction at Bay of Islands new pulp mills in opposition to the Harnsworth Co. at Grand Falls with a capital subscribed of \$30,000,000. Bay of Islands is said to be one of the most beautiful places in the world. It has three arms running twenty miles inland, one of which receives the Humber river. The bay, as its name indicates, is dotted over with islands and surrounded by mountains, among which are Blomidon and Mount Moriah, two of the highest peaks in Newfoundland. The mills are situated on the Humber Arm, which has in connection with it a large herring fishery. The present railroad runs along the Humber valley, with a station at Deer Lake, where the mills are being built. The mill is overlooked by high hills thickly wooded with birch and maple, both woods said to be particularly useful for pulp. The company intend moving the railroad back to the hills, damming the Humber mouth at Corner Brook and flooding the valley. It is said that the new industry will aid greatly in the development of the Ancient Colony.

EMBARGO ON WASTE PAPER.

The United States State Department has received word from the American Consul at Copenhagen, that the Danish Government had placed an embargo on the shipment of waste paper from that country. A message from the American Consul-General at Christiania, Norway, notified the department that Norway has established embargoes against the shipment of hemp waste, and codilla of hemp.

LAW SUIT OVER FOREST FIRES.

The Attorney-General of the Province of Ontario, the Parry Sound Lumber Co., and the Bank of Montreal are plaintiffs in an action against Angus Sinclair, the Canadian Northern Ontario Railway Co., and Mackenzie, Mann & Co., to recover \$68,720 for damage said to have been caused to timber in the township of Street, by trespass and fire.

The bill is itemized for some 77,000 trees, which it is alleged have been destroyed. Of these some 2,200 were cut in trespass, it is said, for poles and bridge timber. A fire caused by railway construction started a fire which destroyed 11,047 pine trees and 24,453 other trees on May 24, 1914. A steam-shovel in a gravel pit started a fire in July, 1915, in which 12,205 pine trees and 27,015 other trees were destroyed. The plaintiffs ask \$16,000 for the increased cost of operating the limit and for damage to the rest of the township.

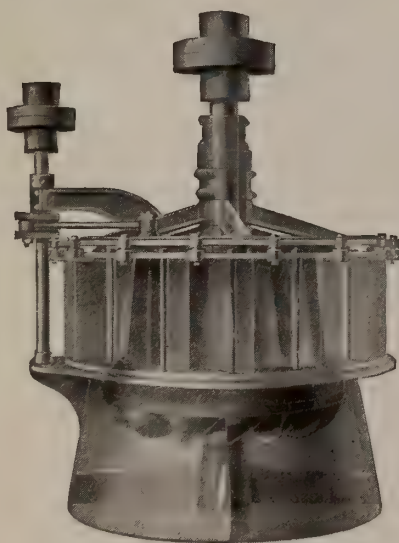
LUMBER COMPANY IN LIQUIDATION.

The Canadian Puget Sound Lumber Company, Ltd., located on Vancouver Island, has gone into the hands of a receiver.

For a considerable time now the plant, with the exception of one or two minor parts, has been idle.

The mill is one of the best known on Vancouver Island, the present company being the successors of the Michigan Puget Sound Lumber Company, who took over the extensive Sayward interests a decade ago. E. B. Cadwell, of New York, a well known financier, is head of the present company.

SMITH HYDRAULIC TURBINES



Are not only of high efficiency but are built to stand continuous service.

Recent tests of these Turbines after installation have shown efficiencies of over 90% at part gate.

We design and build turbines for heads from 5 feet to 650 feet, also furnish head gate hoists, trash rack, steel pipe, etc.

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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Air Compressors**
Blethen, Hugh R., New York
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Air Hoists**
Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Bags**
Smart-Woods Ltd., Montreal, Que.
- Barkera**
Bezner, Albert Machine Works, 299 Broadway, New York City
Boving, Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Waterous Engine Works Co. Ltd., Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M. Co., Inc., New York, N.Y.
- Beaters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Tippet Arthur P. & Co., Montreal, Can.
- Belting**
Can. Fairbanks-Morse Co., Ltd., Montreal, Canada
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Can.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones and Glassco, St. Nicholas Building, Montreal
Reddaway, F. & Co., Montreal, Can.
- Bleaching Powders**
Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Can.
Winn & Holland, Montreal, Can.
- Blowers**
Sherbrooke Mach. Co., Sherbrooke, Que.
- Boilers**
Canadian Allis-Chalmers, Ltd., Toronto
Jenckes Machine Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Brass Wire Cloth, Fourdrinier Wires**
Capital Wire Cloth and Mfg., Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier Street, Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.
- Cable Conveyors**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Calendar Rolls**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
- Carriers**
Northern Crane Works, Walkerville, Ont.
- Chain Crane**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Chain Blocks**
Blethen, Hugh R., New York, N.Y.
- Chain Conveyors**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chain Drives (Silent and Steel Roller)**
Jones and Glassco, St. Nicholas Building, Montreal
- Change Speed Gears**
Jones and Glassco, St. Nicholas Building, Montreal
- Chemicals, Colors, Etc.**
Brunner, Mond & Co., Montreal, Can.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet A. P. & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.
- China Clay**
China Clay Co., Manchester, England
Klipstein, A. & Co., St. Peter Street, Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- Chippers**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Valley Iron Works, Appleton, Wis.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Disintegrators**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens**
Bezner, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Crane**
Blethen, Hugh R., New York, N.Y.
- Hamilton, Wm. Co., Ltd., Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Hand Power**
Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Cranes—Overhead Travelling**
Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Conveying Machinery**
Caldwell, H. W. & Son Co., Chicago, Ill.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jeffrey Mfg. Co., Montreal, Can.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Process Engineers, Ltd., Montreal, Can.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.
- Couplings**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.
- Cut Gears**
Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cutters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
- Cylinders**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Covers**
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Can.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Moulds**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls**
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Dandy Rolls**
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Johnson & Sons, C. H., St. Henry, Montreal, Can.
Marshall, T. J. & Co., Ltd., London, Eng.
- Digester Lining**
Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Process Engineers, Ltd., Montreal, Can.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Digesters**
Pusey & Jones Company, Wilmington, Del.
- Digester Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Drainer Bottoms**
Snell, Samuel, Co., Holyoke, Mass.
- Dryers**
Bertram Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
- Electric Lighting and Power Supplies**
Forman, John, 248 Craig Street W., Montreal
- Engines**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Evaporators**
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Scott, Ernest & Co., Fall River, Mass.
- Exhausters**
The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery**
Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Ltd., London, Eng.
Process Engineers, Ltd., Montreal, Can.
Pusey & Jones Company, Wilmington, Del.
- Exporters**
Parsons Trading Co., New York, N.Y.
- Felts**
Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Mont.

MILL SUPPLIES---Continued

- Filters**
 Chambers Ltd., 152 Bay Street, Toronto.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.
 Pusey & Jones Company, Wilmington, Del.
- Friction Hoists**
 Glens Falls Machine Works, Glens Falls, N.Y.
 Hamilton, Wm., Co., Peterboro, Can.
 Jenckes Machine Co., Sherbrooke, Que.
 Pusey & Jones Company, Wilmington, Del.
 Voith, J. M. Co., Inc., New York, N.Y.
 Watrous Engine Works Co. Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
- Gauges**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Generators and Transformers**
 Chambers Ltd., 152 Bay Street, Toronto.
 Siemens Co., of Canada, Ltd., Montreal, Can.
- Grinders**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Watrous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Hand Power.**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Helicoid Conveyor**
 H. W. Caldwell & Son Co., Chicago.
- Hoists.**
 Blethen, Hugh R., New York, N.Y.
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
 Northern Crane Works Limited, Walkerville, Ont.
- Hoists—Chain Electric and Pneumatic**
 Blethen, Hugh R., New York, N.Y.
- Iron Pulleys**
 H. W. Caldwell & Son Co., Chicago.
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Watrous Engine Works Co., Limited, Brantford Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Jordan Engines**
 Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.
- Knives**
 The Watrous Engine Works Co., Limited, Brantford, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Crookes, Roberts & Co., Sheffield, Eng.
 Hay, Peter, Knife Co., Galt, Can.
 Tippet, A. P. & Co., Montreal, Can.
- Kollergangs**
 Bertrams Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Pusey & Jones Company, Wilmington, Del.
- Laying Machines**
 Chambers, Ltd., Toronto.
 Collis & Sons, J., London, Eng.
- Paper Stock, Etc.**
 Hough, R., London, England.
 Pullan, E., 490 Adelaide Street, W., Toronto, Can.
- Paper and Pulp Machinery**
 Beloit Iron Works, Beloit, Wis.
 Bentley & Jackson, Bury, England.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertram's, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal.
 Carthage Machine Co., Carthage, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto, Can.
 Dillon Machine Co., Lawrence, Mass.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Mach. Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Green Bay Barker Co., Green Bay, Wis.
 Hamilton, Wm., Co., Peterboro, Can.
 Harmon Machine Co., Watertown, N.Y.
 Jenckes Machine Co., Sherbrooke, Que.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Can.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Pusey-Jones Co., Wilmington, Del.
 Rice, Barton & Fales Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
 Smith, S. Morgan, Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, Eng.
 Watrous Engine Works Co., Ltd., Brantford, Can.
 Westbye, P. P., Peterboro, Can.
- Paper Machine Tachometers**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Paper Tester**
 Chambers Ltd., 152 Bay Street, Toronto.
 Marshall, T. J. & Co., Stoke Newington, London, England.
 The Watrous Engine Works Co., Limited, Brantford, Ont.
- Pneumatic Thickeners**
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
- Presses**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Can.
 Chambers Ltd., 152 Bay Street, Toronto.
- Pneumatic Chain Blocks**
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Press Rolls**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 Process Engineers Limited, Montreal, Can.
 Pusey & Jones Company, Wilmington, Del.
- Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
 The Watrous Engine Works Co., Limited, Brantford, Ont.
- Pulp Stones**
 Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.
- Pumps**
 Bertrams Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Allis-Chalmers, Ltd., Toronto, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto.
 Dillon Machine Co., Lawrence, Mass.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Hamilton, Wm., Co., Peterboro, Can.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Pusey & Jones Company, Wilmington, Del.
 Smart-Turner Machine Co., Hamilton, Can.
 Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Watrous Engine Works Co., Limited, Brantford, Ont.
- Recording Gauges**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Recording Thermometers**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Refiners**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Pusey & Jones Company, Wilmington, Del.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Ma.
 Voith, J. M., New York, N.Y.
 Watrous Engine Works Co. Ltd., Brantford, Can.
- Rope, Cotton and Manila**
 Jones and Glassco, St. Nicholas Building, Montreal
- Rope Wheels**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Watrous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Rosin Size**
 Fox, Stockell & Co., London, Eng.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- Rosin Size Boilers and Dissolvers**
 Process Engineers, Ltd., Montreal, Can.
- Rotary Sulphur Furnaces**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Can.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Runways—Hand operated**
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Save-Alls**
 Pusey & Jones Company, Wilmington, Del.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 Watrous Engine Works Co., Ltd., Brantford, Can.
- Screen Plates**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 The Watrous Engine Works Co., Limited, Brantford, Ont.
- Screens**
 Bertrams Ltd., Edinburgh, Scotland.
 Bezner, Albert, 299 Broadway, New York City
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Glens Falls Mach. Wks., Glens Falls, N.Y.
 Harmon Machine Co., Watertown, N.Y.
 Jenckes Machine Co., Sherbrooke, Que.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
 Tippet Arthur F. & Co., Montreal, Can.
 Voith, J. M., New York, N.Y.
 Watrous Engine Works Co. Ltd., Brantford, Can.
 Westbye, P. P., Peterboro, Can.
- Slitters and Re-Winders**
 Bertrams Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto.
 Moore & White Co., Philadelphia, Pa.
 Pusey & Jones Company, Wilmington, Del.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
- Sprockets**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Watrous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Split Pulleys—Wood and Steel**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Watrous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Spiral Conveyor**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Watrous Engine Works Co., Limited, Brantford, Ont.
- Straw Cutters**
 Bertrams Ltd., Edinburgh, Scotland
 Chambers Ltd., 152 Bay Street, Toronto.
- Straw Dusters**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
- Strawboard Making Machines**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.

MILL SUPPLIES---Continued

- Steam Regulator**
Pickles, W. F., Buckland, Conn.
- Steel Barrels**
The Smart Turner Machine Co., Hamilton, Ont.
- Steel Drums**
The Smart Turner Machine Co., Hamilton, Ont.
- Stuff Chests**
The Watrous Engine Works Co., Limited Brantford, Ont.
- Suction Couch**
Process Engineers Ltd., Montreal, Can.
- Sulphite Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphate Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphur**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Tachometers (Hand and Stationary)**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Tanks**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Thermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Transmission Machinery**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Limited, Toronto
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones & Glascoe, Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Transmission Rope**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Traveling Cranes**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart Turner Machine Co., Ltd., Hamilton, Ont.
- Trolleys**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turber Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Turbines**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc. New York, N.Y.
Voith, J. M., Wurttemberg, Germany.
William Hamilton Company, Ltd., Peterborough, Ont.
- Water Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
- Wire Cloth for Paper Machines**
Chambers, Ltd., Toronto.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste**
Hough, R., London, England.
- Wet Machines**
Bertrams Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co. Ltd., Brantford Ont.
- Wood Preparing Machinery**
Beznar, Albert, 299 Broadway, New York City

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R., Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- News Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co., (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.

Kraft

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Riordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp and Paper Mills Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag

- Eddy, The E. B. Co., Ltd., Hull, P. Q.
- Lincoln Paper Mills Co., Ltd., Merritt, Ont.
- Ford, J. & Co., Port Neuf.
- Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board

- McArthur, Alex. & Co., Montreal.

Blotting

- Canada Paper Co., Montreal.

Book

- Canada Paper Co., Ltd., Montreal.
- Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., Montreal, Que.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho

- Canada Paper Co., Ltd., Montreal
- Eddy Co., The E. B., Ltd., Hull, Que.
- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan, and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent. per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent. per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent. per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for lands situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet, board measure.

Railway ties, eight feet long, $1\frac{1}{2}$ cents each.

Railway ties, nine feet long, $1\frac{3}{4}$ cents each.

Shingle bolts, 25 cents per cord.

And 5 per cent. on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. Cory

Deputy Minister.

Department of the Interior, Ottawa,

December 20th, 1912.

PAPER MILLS---Continued

Brisco

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal & Toronto.

Building and Sheathing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co. Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials

Don Valley Paper Co., Ltd. Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co. Ltd., Canada Life Building, Montreal, Que.

Carpet Lining

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper

Lazier Paper Mills, Ltd., Belleville.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope

Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd, St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes

Hinde and Dauch Paper Co. of Canada, Toronto

Flour Sacks

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal

Glazed

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.

Kraft

Brompton Pulp & Paper Co. Ltd., East Angus, Que.
Dominion Paper Co. Ltd., Montreal, Que.
Dryden Timber and Power Co. Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board

Walker, J. R. & Co., Montreal, Que.

News

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd. Grand Falls, New
foundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin Crabtree Mills, Quebec
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co. Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co. Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland and Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que

Wall Board

Beaver Co., Ltd., Beaverville, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde and Dauch Paper Co. of Canada, Toronto

Wood Board

Beaver Co. Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp Paper Co. Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal Que

Wrapping

Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
See also Kraft.

Writing

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
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Little, T. B. & Co., 23 Cote.
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Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill
Federal Paper Co., Ltd.
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Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
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Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

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Alphabetical List of Advertisers

See Classified List on page 51

Unpaged advertisements appear in every other issue

A	
Abitibi Power & Paper Co.....	62
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	60

B	
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd....	10
Bertrams, Ltd.....	7
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	68

C	
Caldwell, H. W. & Son Co.....	18
Cameron Machine Co.....	63
Canadian Boomer and Boschert Press Co.....	8
Canadian Consolidated Rubber Co., Ltd.	2
Canadian Fairbanks-Morse Co., Ltd.	10
Canadian Westinghouse Company, Ltd.	66
Capital Wire Cloth Mfg. Co. Ltd.	63
Carthage Machine Co.....	61
Chambers, Ltd.....	7
Chicoutimi Pulp Co.....	62
China Clay Co.....	
Christie George, Ltd.....	
Churchill & Sim.....	60
Crookes, Roberts & Co.....	13
Crossley T. L.....	65

D	
DeCew, J. A.....	65
Dean & Son.....	6
Dodge Manufacturing Co., Ltd....	6
Dillon Machine Co.....	16
Dominion Belting Co.....	63
Dominion Pulp Woods Limits...	54

E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	61
Emerson Mfg. Co.....	65

F	
Farrel Foundry & Machine Co.	
J. Ford & Company.....	

G	
Glens Falls Machine Works	59

H	
Hamilton, Wm., Co., Ltd.....	14
Hardy, Geo. F.....	64
Harmon Machine Co.....	59
Hartig, Hugo.....	63
Hay Knife Co., Peter, Ltd.....	60
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	63
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg Co.....	
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H....	18
Johnson Chas.....	4
Jones, E. D. & Sons. Co.....	17
Jones & Glassco.....	

K	
Klipstein, A. & Co., Ltd.....	61

L	
Lauderburn, D. E.....	64
Lawrence Machine Co.....	65
Laurentide Co., Ltd.....	13
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M	
Marx, J. & C.....	65
Meincke, G. A. & Co.....	66
Moore & White Co.....	15

N	
National Paper Co.....	16
Northern Crane Works Ltd....	60
Norwood Engineering Co. of Can Ltd	66

O	
Ontario Pulp Wood Limits.	67
Ottawa Car Mfg. Co., Ltd.....	59

P	
Panzl Digester Lining Co.....	68
Paper Makers Chemical Co....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Prestons Digester Lining Co., Ltd.....	16
Process Engineers. Ltd.....	65
Provincial Paper Mills Co. Ltd....	9
Pullan, E.....	63
Pulp & Paper Trading Co.,	63

R	
Rice, Barton & Fales Machine & Iron Co.....	6
Riordon Pulp & Paper Co., Ltd.	62
Rolland Paper Co. Ltd.....	62

S	
Salomon & Co., Felix.....	63
Sandy Hill Iron & Brass Works	17
Schaeffer & Budenberg Mfg. Co	62
Schlick, Leo.....	64
Scott, Ernest & Co.....	
Sherbrooke Machinery Co., Ltd...	5
Smart Turner Machine Co.....	68
Smith, S. Morgan Co.....	
Snell, Samuel Co.....	
Spencer, J. H. & Sons.....	13
Stancilffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.	64

T	
Taylor, J. A.....	
Ticonderoga Machine Works....	67
Tippet, Arthur P. & Co.....	13

U	
Union Screen Plate Co. of Canada, Ltd.....	60
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd.....	63
Voith, J. M.....	12

W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd..	4
Waterous Engine Works Co., Ltd.	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	60
Winn & Holland.....	60

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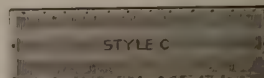
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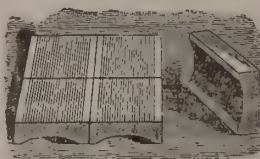
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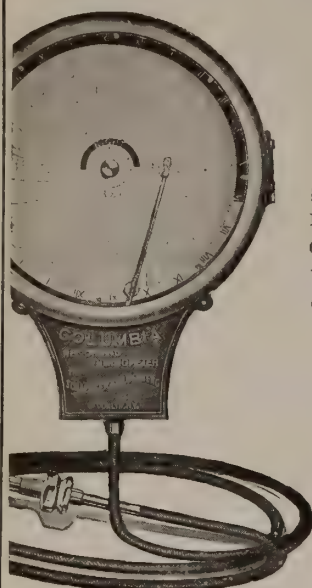
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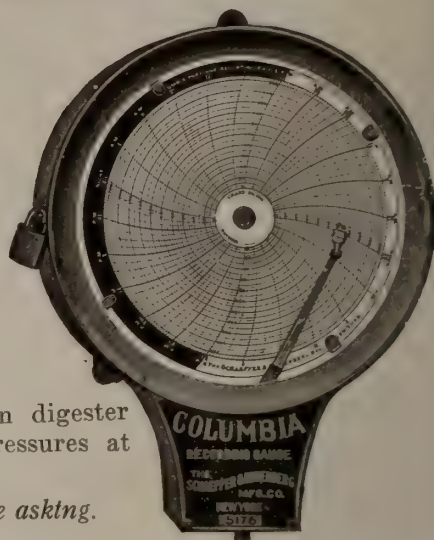
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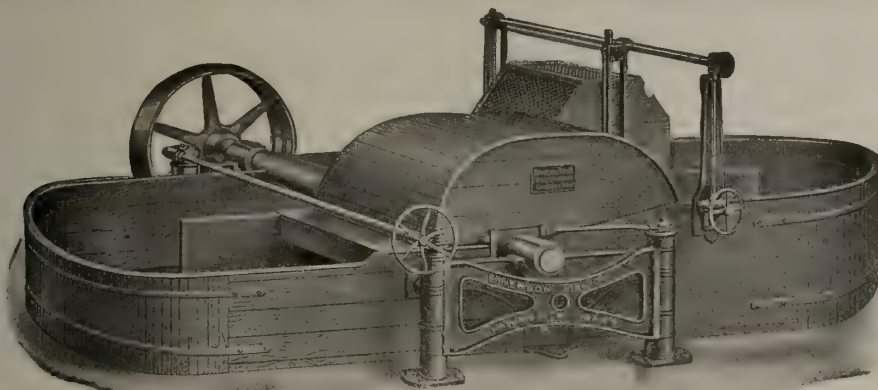
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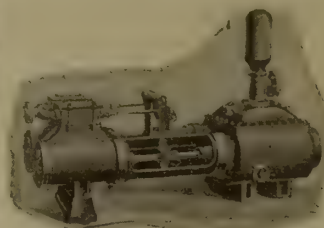


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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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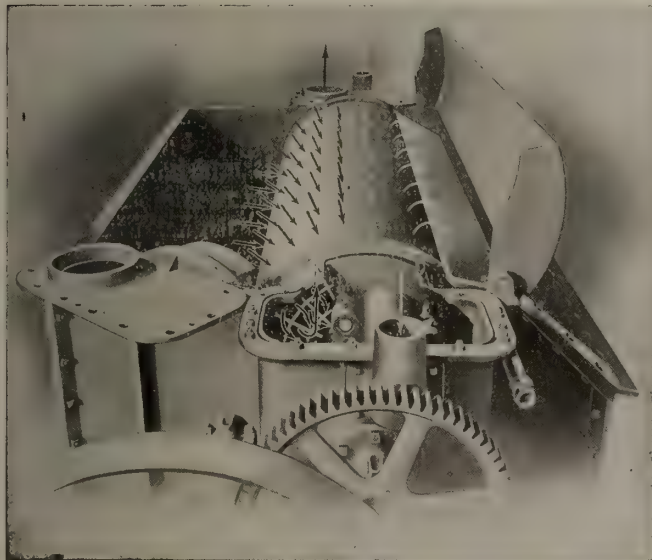
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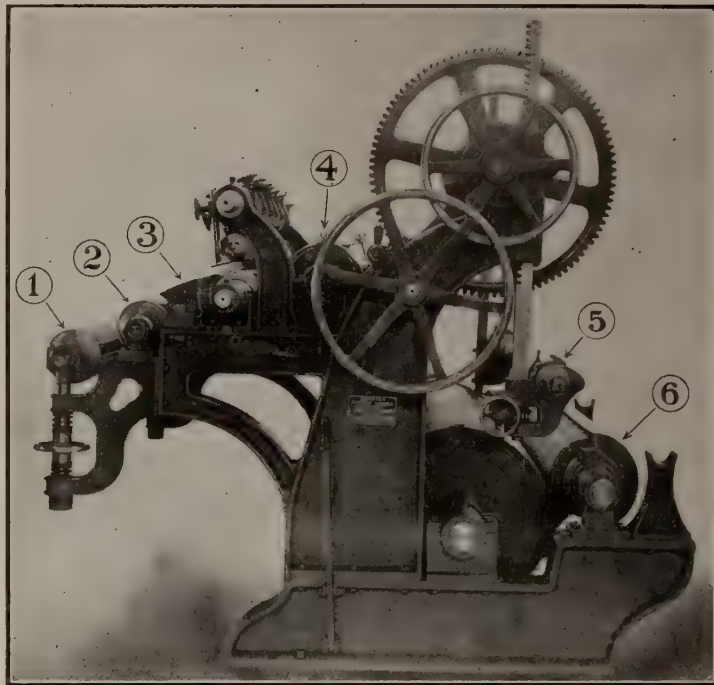
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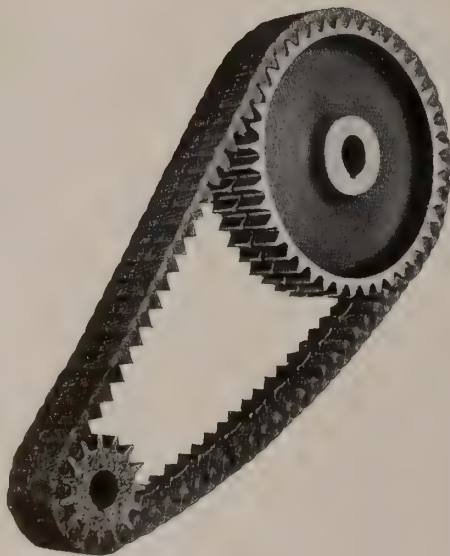
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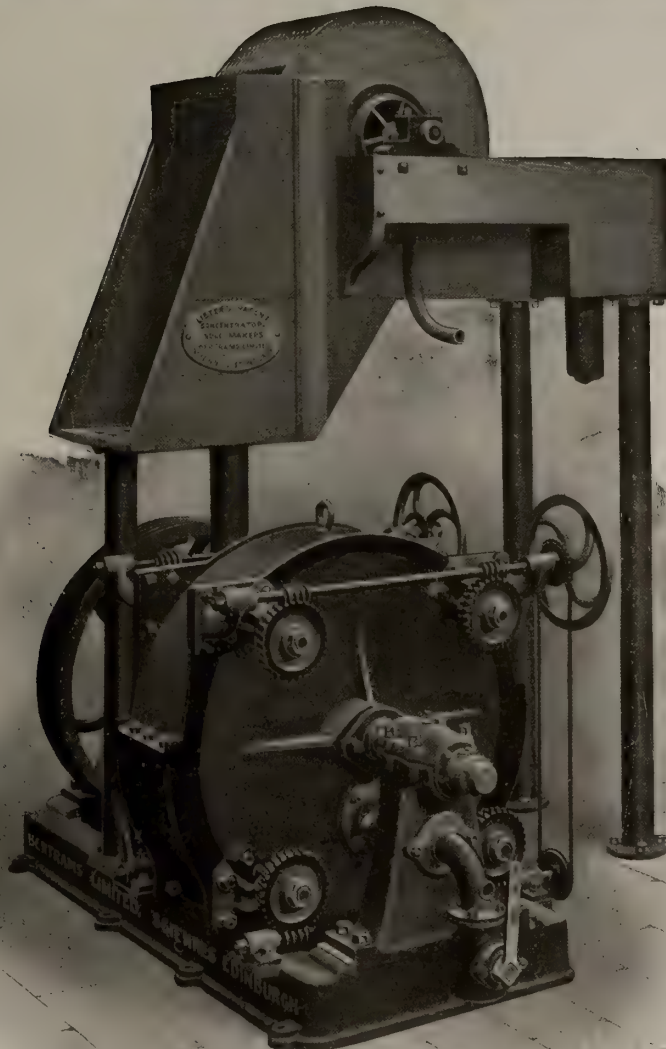
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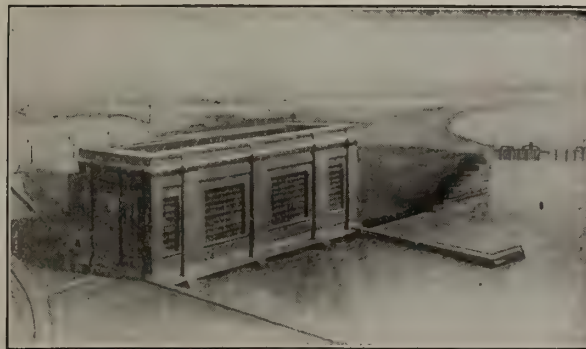
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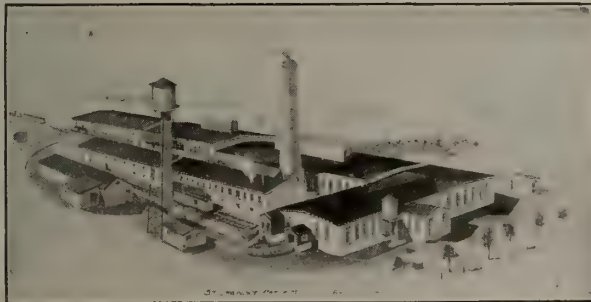
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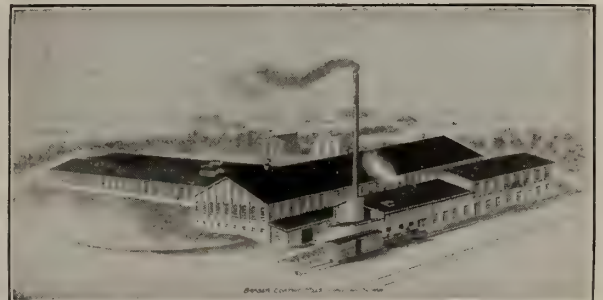
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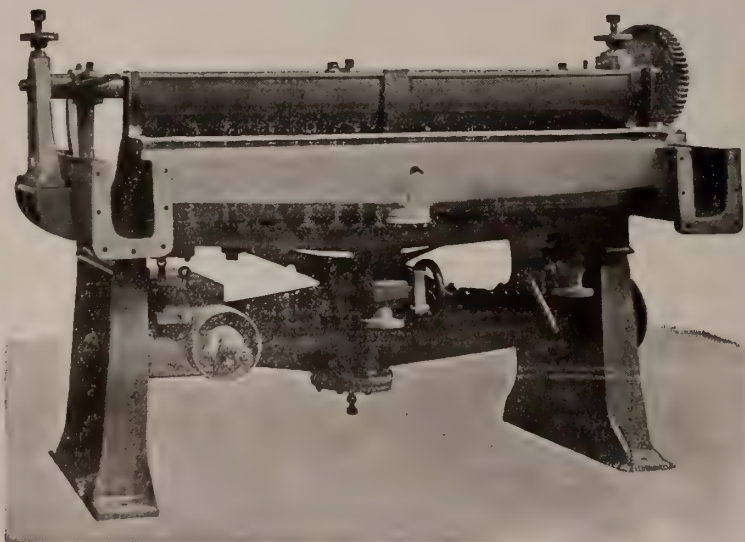
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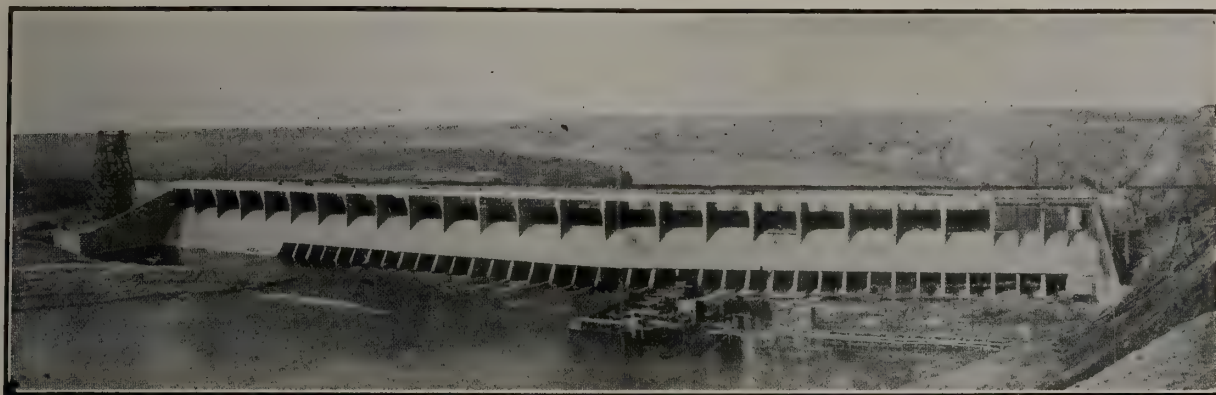
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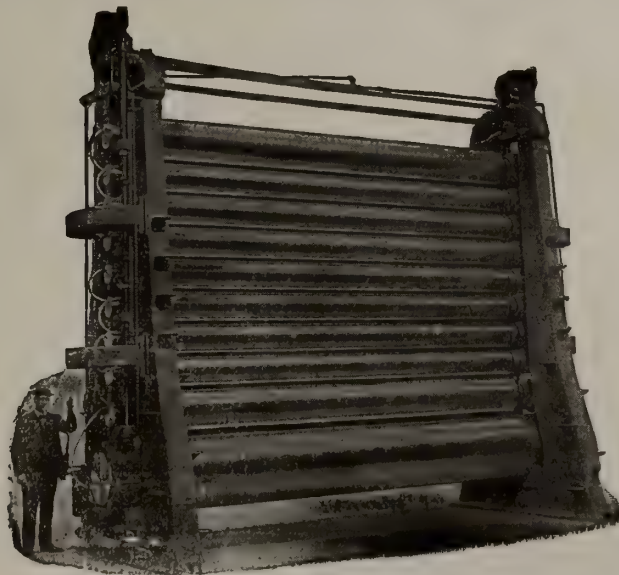
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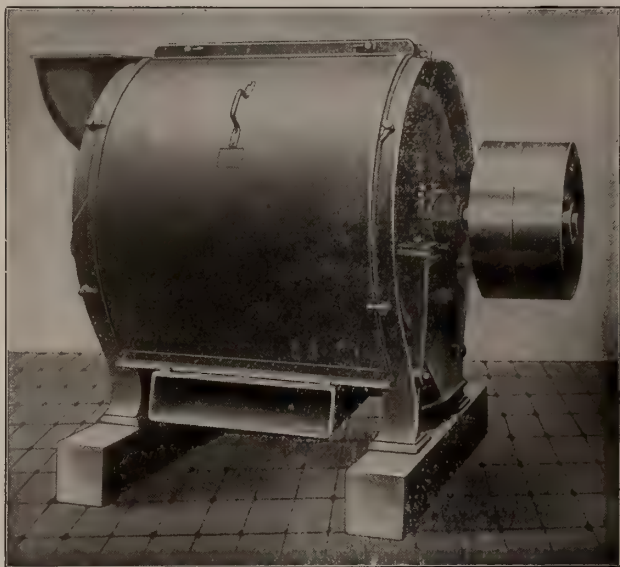
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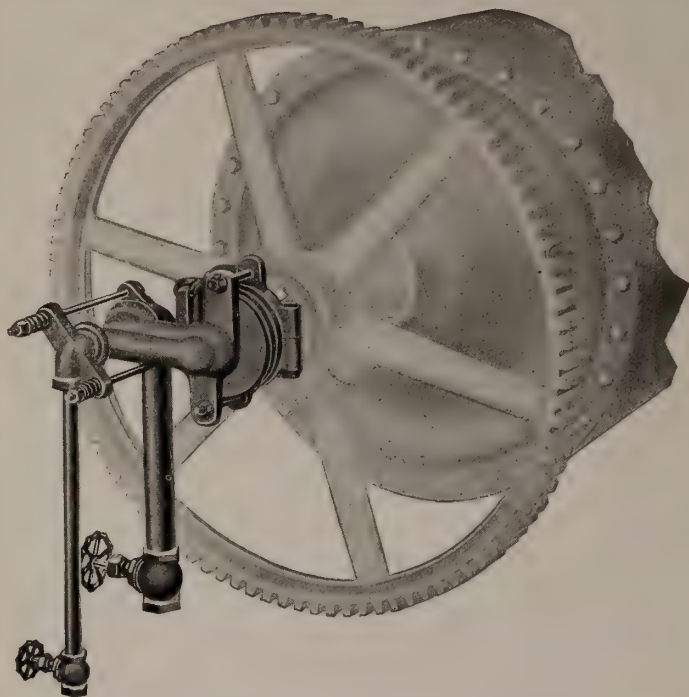
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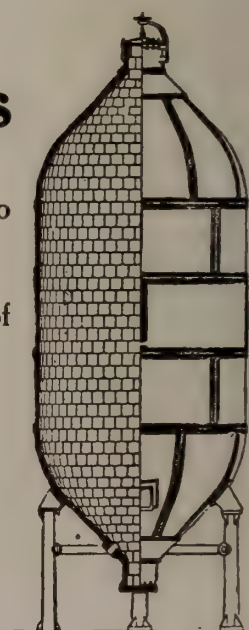
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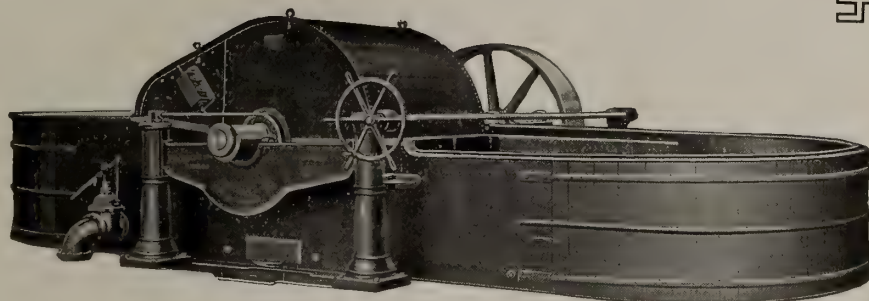
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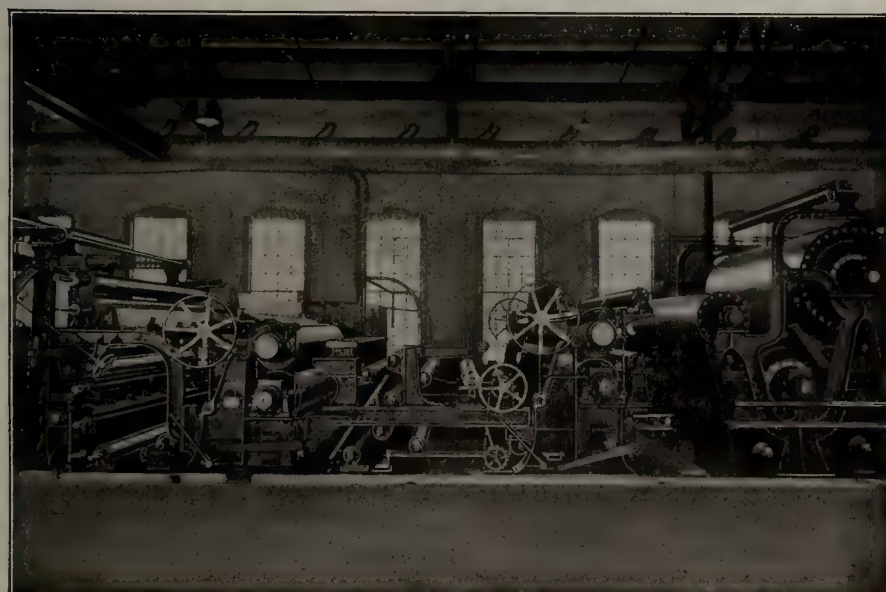
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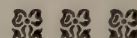
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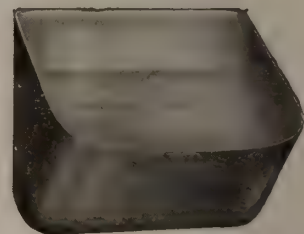
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No. 2

The Meaning of Conservation

It is to be hoped that Pulp and Paper men in large numbers will journey to Ottawa next week and attend the meetings of the Commission of Conservation, the Canadian Lumbermen's Association, the Canadian Forestry Association, and the Civic Improvement League. These bodies may not have a direct and immediate relation to the affairs of pulp and paper men, but the connection is so close and vital that everyone interested in the forests of the land and in the great movement for the conservation of our resources should make it a point to be on hand.

The conservation of our resources project started a few years ago by Sir Clifford Sifton and some kindred spirits, has grown into one of the great movements of the age. Until a few years ago we were deluded into the belief that our forests were inexhaustible, that our waterpowers could furnish untold millions of horsepower, and that in brief, nature had thrown into the lap of the nation illimitable resources. Stock taking showed us that we were far too optimistic. Our forests do not contain the vast quantities of pulpwood and timber of which we were told, nor are our streams and waterfalls beyond computation. Nature has been a generous giver, but placed limitations on the resources she bestowed upon this fair land.

The Conservation Movement has accomplished untold good, despite the handicaps and misconceptions under which it labored at the outset. At first the exhortation to conserve our resources was taken by some to mean that not another tree should be cut, a stick of timber utilized, or a cord of pulpwood removed from our forests, but that, in some altruistic manner all our natural resources should be left for posterity. A closer study of what Conservation meant showed the fallacy of such views. It soon dawned on all right thinking men that Conservation was but another word for "husbanding our resources" or "safeguarding our

interests" or "showing good business foresight." It did not seek to have our forests remain untouched by the hand of man, but rather to have intelligence applied to the cutting of trees, and the proper utilization of our forests and waterpowers. It demonstrated that a tree comes to maturity as a blade of grass or a head of grain, and if it is not cut down and utilized when ready for "harvest" it deteriorates just as a head of wheat is lost unless cut at its proper season. What the movement did seek to overcome was the careless old-time method of slashing down trees irrespective of their age or character, the wasteful methods characteristic of former lumbering days, the destruction of waterfalls, the drying up of streams and the hundred and one other sins of omission and commission. In brief before the advent of the Commission of Conservation it could truthfully be said of us that "we have done those things which we ought not to have done, and left undone those things which we ought to have done."

To-day these things have been changed, due very largely to the work of the Commission. Our better and more progressive pulp and paper companies, as well as our lumbermen, employ forest engineers to map out their reserves, select the trees for cutting, engage in reforestation, and, in brief, are applying good business methods and common sense to enterprises formerly characterized by extreme wastefulness and indifference. It has been a change for the better.

Mobilizing Their Resources

"The Swedish Chamber of Commerce for the United Kingdom" have just issued a special Wood Pulp number of their monthly journal. Swedish pulp and paper men have shown a great deal of enterprise in the past, and it is evident from a perusal of the special number that they intend capturing as much as possible of the world's paper trade in the reconstruction

period following the war. In his Foreword the editor says:—

Most countries are already mobilising their resources and organising their forces in order to enlarge their export trade when peace is restored. Nobody with a knowledge of Sweden will deny that that country will play a more important commercial role in the future than it has in the past, owing to the rapid development of its numerous industries.

It is to be hoped that our Canadian pulp and paper men will take a leaf from their Swedish rivals and several large firms, in order to catch up, have been mobilise their resources. There are many fields formerly held by Germany and Austria that might be captured by our manufacturers if a serious effort were made at this time. From New York our American cousins are shipping hundreds of thousands of dollars worth of paper each week, the shipments going to as many as thirty-three different countries. Surely a portion of that business can be captured by Canadian paper makers.

Creosoted Wood Block Pavements

A few years ago wood block pavements were all the vogue in Canada and in the United States. There then arose a prejudice against them, due to improper methods of laying, failure to utilize preservatives and to the general belief that such pavements were short-lived and unsatisfactory.

Recently creosoting of wood blocks was introduced, and since then this form of pavement has made rapid gains in popularity. Creosoted wood blocks last for a generation, are noiseless or nearly so, do not produce dust, and in general form an ideal pavement. Creosoted wooden pavements, as now laid, are entirely different from the wooden pavements of a generation ago. Then the blocks were laid upon a plank bed, and sometimes even upon a prepared earthen bed. The modern wooden pavement is laid upon a smooth firm bed of concrete, which gives the blocks an even surface, which, after a little traffic has passed over, closely resembles sheet asphalt.

Experiments in many of the large cities of Europe and in the United States show that creosoted block pavements outlast other paving materials, while the absence of noise and dust are other favorable factors. A wood pavement is also easier on horses' feet, nor is it as slippery in wet weather as the much used asphalt pavement.

Canadian lumbermen and others interested in the question of utilizing to the full our forest products might do well to give more attention to this question. Undoubtedly there are many woods suitable for block pavements that are not being used for other purposes. A little enterprise and foresight would be productive

of large returns. Creosoting has come to stay. Railroads now find it profitable to creosote their ties, and eventually all our civic authorities will find that creosoted wood pavements are the most profitable to use.

This has been proven in a number of cases one of the most interesting being in Baltimore where, under Government supervision several kinds of pavement were laid on a street in strips 30 feet wide. The various kinds of pavement were left down for four years, being subjected to extremely heavy traffic. The city engineer, in his report, stated that the result was overwhelmingly in favor of the creosoted blocks, the other pavements, which consisted of asphalt block, sheet asphalt and several kinds of vitrified bricks, being all more or less worn out. As a result of his report the entire area in Baltimore subjected to heavy traffic has been laid with creosoted blocks.

New Paper Making Materials

The growing scarcity of wood suitable for the manufacture of pulp and paper has stimulated research work in an effort to find other paper making materials.

The Argentina Republic, which is forced to import practically all its paper, has taken the lead in this research work. As a result of the extensive investigations carried on by the Argentine Bureau of Forestry, a commercial pulp is now being produced from the Misiones and the Neuquen pines. A half ton of pulp can be obtained from a ton of this wood, which is about half the amount obtained from our spruce and other pulp producing woods.

In India, *Hedychium*, a plant of the ginger family is being utilized for the making of paper. This plant grows in swampy districts throughout the country, and as it is easily propagated, India paper men are looking forward to the time when it will become an important factor in the manufacture of paper.

Experiments made in Germany with broom fibre have not resulted in very satisfactory returns, but on the other hand experiments made with hop vines have given fairly good results. In the United States investigations are being carried on with a view of utilizing the enormous quantity of flax straw which now goes to waste. It is estimated that 1,500,000 tons of flax straw are burned or permitted to go to waste each year in Canada and the United States. The United States Department of Agriculture is now experimenting to make flax straw a material for the manufacture of paper and fibre board. Eventually chemists and scientists will discover materials which will lessen the present demand for pulpwood, but so far there has not been a material found that will give as satisfactory results as paper made from the spruce tree. Paper men everywhere will watch the efforts of the scientist with sympathetic interest.

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RICHARD WELCH.
GEORGE WASHINGTON.
D. SUTHERLAND.
E. PEACOCK.
A. F. McBRYER.
ROD McCAULAY.
R. W. LUMBARD.
THOS. FRASER.
W. D. DOYLE.
J. FALCONER.
J. COLE.
G. E. COLE.
T. ALLSWORTH.
JAMES CLAPP.
H. A. CARTER.
WM. STANLEY.
JACK BANHAM.
DAVE WILSHIRE.
A. V. GILLINGHAM.

French.

AUGUST SLOSSA.
J. GAGNON.
LEWIS SLOSSA.
ED. BAGHUM.

Russians.

MIKE ZUTZ.
MIKE ZUKOFF.
A. ZORATH.
R. ZOKOFF.
GUS ZOCOFF.
A. VANOFF.
TOM VADIFF.
B. VADIFF.
M. VADIFF.
BORIS URTAEFF.
M. TORCHING.
M. TARIEF.
S. TAGOFF.
M. TAGOFF.
ALEC. SOLOFF.
B. SERCOFF.

N. NUMSUROFF.
MAX FIDAROFF.
R. DYEBOEFF.
M. DOEFF.
JAS. CHET.
JOE CARVER.
C. MIKE.
ALEC. KUGOFF.
M. MALIFF.
A. KUBALOFF.
V. KOZOFF.
ALEC. KOOTENZO.
C. KOOBLOFF.
A. KAROFF.
GEO. KAROFF.
J. KAPALF.
M. KANOFF.
JIM KARDIFF.
M. CAROFF.
MIR CAROFF.
J. CADIFF.
J. GOODENOFF.
ALEC. GILOFF.
A. FIDAR.
A. DIGNROFF.
ALEC. DOEFF.
A. CATIEFF.
PETE BAZIEFF.
M. ALICOFF.
G. KAMEROFF.
ALBERT KAMEROFF.
JIM JUBULOFF.
A. MURMEROFF.
I. NUDALOFF.
MIKE HAMEROFF.
M. NODOFF.
MIR NODOFF.
B. NODOFF.
M. KANOFF.
A. NADZARAGOFF.
G. GUBIEFF.
A. GOSOFF.
M. GODIFF.
MIKE FRAY.
ALI ELLOFF.
S. DOEFF.
J. COROFF.
J. CAROFF.

Belgians.

O. PERSON.

Italians.

B. SANTO.
L. BAZZANI.
F. PARON.
A. PARON.

Edwin Crabtree and Sons, Limited.

WALTER R. STAFFORD.

Interlake Tissue Mills, Limited.

R. McCANN,
F. NILES,
M. HOPKINS,
P. RICHARDSON.

The Belgo-Canadian Pulp and
Paper Co., Limited.

ROLAND COMTE.
ANDRE SYSTERMANS.
LEONARD DEVENYNS.
G. BATES.
EDOUARD CURTET.
G. GOLDTHORP.

Laurentide Company, Limited.

M. JEAN ARHAN.
M. FRANCOIS DARCHEN.
A. ANDERSON.
HECTOR AUBIN.
CHARLEY BROWN.

HARRY BROWN.
 ROBERT BROWN.
 ALF. BELANGER.
 GEO. CAPSTICK.
 ADENE CARLE.
 GEO. COPE.
 GUILLAUME DARCHENE.
 C. B. DICKSON.
 FRANK DORE.
 F. DORE.
 G. FARIE.
 JAMES FLYNN.
 L. GAGNE.
 A. M. GAMMELL.
 THEO. DE GRAMONT.
 F. X. DE GRAMONT.
 JOHN GREER.
 JOS. HIGGINS.
 F. HODGES.
 M. P. HUBBARD.
 SAM IRONS.
 F. KEELING.
 A. LAMOTHE.
 O. B. LANE.
 S. L. MASSON.
 MALCOLM MACDONALD.
 ALB. MORIN.
 AL. MOON.
 BERT MOORE.
 LEONARD MOULD.
 T. W. McSKIMMING.
 E. P. OCKENDEN.
 C. S. L. PEARCE.
 JACK PENDER.
 JACK PULLEN.
 H. RATHBONE.
 PRINCE ROSARIO.
 J. S. SCOTT.
 GEO. STAINEN.
 J. SUNDERLAND.
 JOS. WEBB.
 ROBERT WILSON.

John Rickinson and Co.

J. A. SHELLEY.
 J. MATHIESON.

Trent River Paper Company, Ltd.

ROSS R. HERMAN.

Riordan Pulp and Paper Company,
Limited.

Hawkesbury Mill:

J. RAE.
 G. SOPLENIK.
 JOHN BOYDELL.
 J. DESLAURIER.
 JOHN BOYDELL.
 R. WEBSTER.
 J. MCGILLIS.
 R. FIGURE.
 STEVE HOCK.
 PAVEL YUHUMUIK.
 G. SAPELEINK.
 J. BUCHANNAN.
 E. SEVIYUIK.
 B. GARLIEG.
 JOHN MCGILLIS.
 L. H. DESLAURIER.
 J. J. BOYDELL.

Merritton Mill:

J. HANLEY.
 J. FIEVE.
 T. LAMB.
 F. PRATT.

Wood Dept. and Saw Mills:

Capt. C. E. READ.
 Sergt. ALEXANDER FENTON.
 Q.M.S. C. SCOTT CHOWN.
 Pte. ROLLAND WILLIS.
 Pte. HAROLD BATES.
 Pte. JNO. TURNBULL.
 Pte. MILTON J. TAYLOR.
 Pte. WILFRID ROCHON.
 Pte. J. ROBILLARD.
 Pte. J. E. JEANOTTE.
 C. SMITH.
 L. HANDYSIDE.

Dominion Paper Company.

WM. ROLLO CURRIE.

Bathurst Lumber Company, Limited.

H. SWEENEY.
 C. L. BROWN.
 P. DONETI.
 P. JUNEAU.

Alex. McArthur and Co., Limited.

HARRY PREW.

S. R. HART AND COMPANY.

FRANK BEDDOW.
 GEORGE COLLINS.
 THOMAS DRINKWATER.
 GORDON EDGAR.
 Lieut. MELVILLE M. HART.
 ALFRED HIBBERT.
 THOMAS ROGERS.
 PERCY RICHARDS.
 ROY STAMPS.



SULPHITE MILL OF THE BATHURST LUMBER COMPANY, WHICH COMMENCED OPERATIONS THIS WEEK.

SULPHITE PULP FROM POPLAR

By JAMES BEVERIDGE

(Specially Written for the Pulp and Paper Magazine)

It is generally recognized throughout the pulp industry that in order to obtain a satisfactory chemical fibre from poplar wood, the soda process is alone applicable. The reason of this lies rather in the fact that the poplars are frequently found discolored when felled and peeled especially the heart-wood, than in the wood itself being unsuitable for conversion into pulp by the sulphite process. Given, however, poplar of medium quality, free from rot and black seams, it will yield by the sulphite process a very high grade fibre that bleaches easily and can be used in the manufacture of the highest quality of printing and writing papers. It is fast becoming recognized as the best known substitute for esparto fibre, and in this direction its consumption is steadily on the increase. The pulp is not so soft as that obtained by the alkaline process but both its strength and felting properties are greater.

The common poplar (*populus alba*), the aspen (*populus tremula*) and willow (*Salix Capre* and *Salix Fragilis*) are the most frequently occurring members of this family. The common poplar is widely distributed over North America, and occurs very abundantly in our forests in Canada, whilst the aspen and willow are more or less cultivated on the European continent, the branches of the willow forming the staple of the Dutch hoop industry, while the trunk is used for the manufacture of "elumps" (the wooden shoe of the Hobander) and white wooden-ware. Any one who has travelled through Northern France, Flanders and Holland must have been impressed with the wide cultivation of the willow and poplar in that region. We have scarcely arrived at that stage yet in this country when the poplars will be cultivated for their fibre yielding qualities, but in France a large quantity of this wood is annually converted into pulp for paper making. As is well known the trees of this family are rapid in growth in damp soil, and require no great amount of attention during their growth.

Some years ago representative samples of the common poplar and willow were treated by the sulphite and soda processes to ascertain the yield of fibre which each of these processes gave. The samples were obtained from well known sources in Flanders and represented good quality wood of mature age, that is true not less than twelve inches in diameter at the stump. The samples were dry and subjected to almost exactly the same treatment with the following results:

Common Poplar (*populus alba*). The woodchips contained 14.9 per cent of water, dried at 212 deg. Fahrenheit. When digested in bisulphite of magnesia liquor containing 4.0 per cent total SO_2 of which 66 per cent existed in the free or uncombined state the yield of unbleached fibre dried at 212 deg. Fah. was found to be 59.34 per cent reckoned on the oven dry wood. The weight of one cord (128 cubic feet) of this cleaned wood containing 14.9 per cent of water was found by actual test to be 2,613 lbs., so that one cord

of the cleaned or peeled wood yielded nearly 1,352 pounds of overdry unbleached fibre or 1,502 pounds of an dry pulp containing 10 per cent of moisture. From these figures one ton (or 2,000 lbs.) of unbleached pulp were obtained from 1 1-3 cords of cleaned air dry poplar. The wood was sound in every respect and yielded a pulp of a slightly reddish brown color in the unbleached wet state.

Willow (*Salix Capre* or *Salix Fragilis*.) The sample of this wood was delivered in the form of chips, was very white in color and when the moisture was determined by drying at 212 deg. Fah. was found to contain 14.0 per cent. The ash contents = 1.4 per cent. Treated in precisely the same way as above, in bisulphite of magnesia the yield of oven dry fibre was found to be 55.65 per cent on the oven dry (i.e. wood-dried at 212 deg. Fah.) equivalent to 61.27 per cent on dry weight containing 10 per cent moisture.

The two results closely approximate one another and both clearly indicate that a high yield of pulp can be obtained from such woods when treated by the sulphite process. The pulp obtained from one cord is apparently high due partly to the shrinkage of the wood on drying to 14 per cent water, and to the fact that the log was straight, smooth and free from rot and other faults. A cord of such logs, closely piled together, would represent more solid cubic feet than that usually obtained in the ordinary way in commerce, when purchasing this material. The fact remains, however, that both the poplar and willow yielded a much higher percentage of cellulose by the sulphite than by the soda process.

Pulp wood is purchased in Europe by the cubic metre (35.31 cubic feet) or by the cubic fathom (216 cubic feet), both piled timber and almost invariably in the peeled state when for export. Sometimes it is bought by the load which represents 50 cubic feet solid wood. It was found in actual manufacturing practice that the yield expressed in terms of finished paper from the common poplar by the sulphite process was 770 lbs. per cord, and as 3 1-3 loads usually go to make up a cubic fathom and 2 loads to a cord it follows that the yield per cord was 1,520 lbs. nearly. Papermakers generally reckon on one ton of sulphite pulp (10 per cent moisture) producing one ton of finished paper on an average.

According to Ziegelmeyer (Paper Makers' Pocket Book, 2nd Ed., page 89) a cubic metre or 35.31 cubic feet of unpeeled poplar (*populus alba*) containing 34.8 per cent of water weighed 1,432 lbs., and yielded 35.4 parts oven dry fibre per 100 parts oven dry wood by the soda process. A cord of such wet wood weighed 5,198 lbs. and assuming the wood to be peeled it yielded by this method of manufacture 1,181 lbs. oven dry pulp equivalent to 1,322 lbs. air dry pulp containing 10 per cent moisture. It would therefore appear that the sulphite process yields about 14 per cent more fibre than the caustic soda method from this particular kind of wood.

THE VALUE OF ASH TESTS AND THEIR SIGNIFICANCE

By J. O. S. E. PLUMSTEAD,

(Specially Written for Pulp and Paper Magazine).

The value of ash tests or tests for the per cent of filler retained in paper is without doubt recognized, to a certain extent, by every practical paper maker. Few paper makers, however, attach any more significance to an ash test than that the sheet in question has a certain number of pounds of clay, agalite or other filler, per hundred pounds of paper. Nevertheless, it is a fact that tests made at different points through the paper-making process have proven or disproven some of the seemingly unexplainable problems that often confront paper makers, paper mill engineers and chemists.

In a paper mill chemical laboratory the final result of an ash test of a certain sheet from a particular machine is usually reported as per cent retention of filler and this result is reached in the following manner. An average sample of the filler used is drawn in the usual manner and a small weighed portion placed in a crucible over a blast lamp and ignited to a constant weight and from these weighings the percentage of volatile matter in the filler is calculated. A weighed sample of the paper to be tested for per cent retention of filler is then taken and ignited in a crucible to a constant weight and from these weighings the per cent ash in the paper is calculated. From the following formula the amount of filler retained in the paper or the per cent retention by the machine is

Pc

found $\frac{\text{Pc}}{\text{F}-\text{V}}$ equals per cent retention by machine.

When—

Pc—Per cent ash in paper sample.

F—Pounds of filler used per hundred pounds of paper produced by that machine.

V—Volatile matter in the weight F.

If greater exactness is desired a correction may be made for the ash in the fibre used or in constituents of the paper other than the loading material. This is useless from a practical standpoint, however.

There are various causes, in the filler itself in the method of beating and in the manner of running the paper machine, for a higher or lower percentage of retention in some cases than in others. In the filler, qualities which tend to give a higher percentage of retention are, a colloidal character, fibrous texture and large particles. These qualities may be estimated by a chemist's judgment from microscopical comparisons, elutriation and rate of settling tests and aniline dye absorption tests. The extremes of these qualities may cause almost any variation in the retention of filler. A thoroughly beaten stock will retain much more filler than stock beaten a short time. As high as twenty points difference between stock beaten three and one-half hours and stock beaten six hours has been noted. There are several ways in which the machine tender may raise or lower the retention of filler. If the machine has a short wire the speed of the machine should be correspondingly slow, otherwise harsher treatment must be resorted to in order

to remove the water and the water will, in being forced through the sheet faster carry with it more of the filler. The stock should be run to the machine at the heaviest possible consistency to allow for the most efficient reuse of the rich white water which has been forced through the wire. An escape of the white water means an inevitable drop in the retention. If it cannot all be used to advantage at different points in the process it can be settled and the sludge drawn off and reused at some point, either in the beater or in the beater stuff chest. The ream weight will largely influence the retention of filler and this fact should be taken into consideration when comparing ash tests of different sheets, thus, other conditions being the same, the retention of an eighty pound sheet should be about ten points higher than a fifty pound sheet.

The writer has found the following method effective in hunting down reasons for seemingly unexplainable low retentions. Convenient portions of stock, about fifty cubic centimeters, are taken from the beater or beater chest and the flow box and a dry sample from the reel, following as nearly as possible the transit of the stock from one place to the other. The wet and dry samples are then placed in a dry oven and dried to a constant weight and then ignited and weighed and the ratio of filler to fibre noted in each case. These tests are repeated several times and the averages taken. The average ratios obtained in this manner are then compared with ratios obtained in the same manner on the same kind of sheet, running on the same machine or on another machine at conditions giving the recognized standard ash test for that sheet. These results should indicate the following things:

(1) Whether the required amount of filler was actually furnished to the beater.

(2) The consistency of the stock going on the wire.

(3) The comparative loss of filler through the wire.

With the trouble thus definitely located it is a simple matter to remedy the defect.

Occasionally in the run of routine ash tests when a small furnish of filler has been made per beater the retention will figure out over 100 per cent. This trouble can almost invariably be traced to a lack of system in furnishing broke to the beaters, either from furnishing broke in irregular quantities to different beaters of the same machine or furnishing the beaters of one machine with broke from another whose sheet contains a different relative amount of filler. It may be safely stated that in the case of routine ash tests of paper of known qualities if the retention varies more than five points either way from the average for that sheet and that machine trouble will have arisen in seventy-five per cent of the cases from irregularities in furnishing broke.

The writer has found that when all practicable precautions have been taken to prevent the loss of clay through escape of white water the approximate

average retention for best English china clay is as follows:

10 lbs. china clay used per hundred pounds paper made should give about 50 per cent.

15 lbs. china clay used per hundred lbs. paper made should give about 90 per cent.

20 lbs. china clay used per hundred lbs. paper made should give about 85 per cent.

25 lbs. china clay used per hundred lbs. paper made should give about 80 per cent.

30 lbs. china clay used per hundred lbs. paper made should give about 72 per cent.

The above weights are figured on clay dried at 100

degree C. Other fillers may give a higher or lower retention than clay but some standard must be taken and this standard should be the most uniform and widely known substance.

Much of the value of ash tests on paper depends upon their being done on a routine basis. As the manipulation does not require any exceedingly expensive apparatus, with the exception of a delicate analytical balance, or any expert knowledge of chemistry, there is little reason for any paper mill doing without this exceedingly important method of keeping in touch with the way in which their machinery and their men handle their loading materials.

PLANTING FORESTS FOR PROFIT

THE INTERESTING STORY OF THE LAURENTIDE COMPANY'S SUCCESS ON WASTE LANDS
NEAR GRAND MERE, P.Q.

By ELLWOOD WILSON

Chief Forester, The Laurentide Company, Limited

While no excuse is necessary for beginning to plant trees on a large scale for a future supply of raw material, still the reasons which led to the inception of the idea by the Laurentide Company, Ltd., of Grand Mere, Quebec, may be of interest to the members of the Canadian Forestry Association.

Lumbering on this continent had always seemed to me to be conducted in a very hand-to-mouth way. The waste the rule of thumb methods, the way-father-used-to-do-it attitude of mind, the recklessness in regard to fires and the lack of thought for the future seemed so inefficient. Lumbering was carried on precisely like mining and when the forest was exploited and destroyed in one section the lumberman moved on to other. Then a trip to Europe, just after leaving the university, on which I tramped and bicycled through northern France, southern Germany and part of Austria and Switzerland, opened my eyes to the possibilities of rational utilization of forests. It is of course self-evident to every thinking person that no scheme of operations can be bodily transferred from one set of conditions to another entirely dissimilar, but the general underlying principles are the same and can be adapted to different circumstances. This point of view was strengthened by a study of lumbering conditions in the Adirondacks and my first trip into the woods in Quebec showed me that Canada was still playing with zest the good old game of killing the goose that lays the golden eggs.

The Case of Paper Mills.

If the above is true for the lumberman, how very much truer it is for the pulp and paper industry, anchored to a locality by a costly plant, designed to run practically forever. The two essentials for the manufacture of pulp and paper, cheap wood and abundant water, are inseparably bound together and mutually interdependent, for as the forests are cut off the supply of water diminishes and becomes uncertain.

When one of these plants is to be built, an expert engineer is consulted, elaborate plans are made, expensive surveys of rivers and careful gauging of their flow are carried out and every effort is made to see that in the

handling of materials from one part of the plant to another there shall be no waste and no lost motion. Every device which will reduce the cost of conversion and eliminate waste, or do away with labor is installed, all sorts of precautions against fire are taken and the most efficient and economical methods are planned. But the forest, on which the success of the whole enterprise completely depends is treated in the most casual way. Some man who is supposed to know the country is sent out to report on the timber. He is popularly supposed to have some instinct by which he can in a few days say how much timber there is standing on a thousand square miles, and all honor to the cruiser for the way he tries. Millions have been spent for plants by directors who had absolutely no idea of their timberlands, no maps, no estimate of the amount of timber, worthy of the name, and no idea of how long the available supply would last. Often part of the lands were so inaccessible that it will practically never pay to remove the timber.

The Idea in Practice.

It has always seemed to me uneconomical to hold a million acres of timber, one hundred miles from where it can be used, with the crudest means of transportation only available, when the same supply could, in a relatively short space of time, be provided for by planting one hundred thousand acres situated ten miles from the point of utilization. With such a supply more economical methods of cutting, handling and transport can be used and machinery substituted for hand labor. Then, too, the fire risk is materially reduced and closer utilization owing to cheaper transport eliminates a very large amount of waste.

This point of view I laid before the Vice-President of the Laurentide Company about 1907 and secured his consent to the making of some experiments. Having thirty fire rangers waiting to go into the woods in May, 1908, I obtained through the kindness of Mr. E. J. Zavitz, Forester for Ontario, 5 thousand, white Scotch and Jack Pine trees, four years old and these were planted on waste lands on the banks of the St. Maurice River. They have grown well and have reached an

average height, for the white pine of five feet, for the Scotch pine of eight to ten feet and for the jack pine of twelve to fourteen feet.

An Improved Nursery.

In the winter of 1910-11 a trip to the more important forest and nursery stations in Norway, Sweden, Germany, France, Austria and Switzerland confirmed me in my views and in the spring of 1911 a very small nursery was started which has since been enlarged each year and will next year have a capacity of 1,000,000 trees per year. In the beginning we modelled our work on the New York State Nursery at Lake Clear Junction under Mr. Pettis, New York State forester, but our experiments have led us to depart quite widely from that practice so as to meet local climatic conditions. We do not surround our beds with planks, they are hardly raised at all above the level of the surrounding ground, we use no wire screens or burlap over the beds and we do not plant broadcast. Mr. Arnold Hannsen, who is in charge of this work, has discovered that most of the conifers do better if planted in the fall; they germinate early in the spring and show a larger germination per cent and seem to be less sensitive to damping off, this is most marked with white pine which gains practically a year's growth by being sowed in the fall. We find the Norway Spruce a much easier tree to raise from seed than any other spruce that we have tried. It germinates better, the growth is more rapid and the trees hardy. White spruce germinates poorly and for the first two years grows very slowly. Balsam shows the same results. All the native pines are easy to raise and show good results and Pinus Ponderosa also does well here, so far. Abies Nobilis does better in the nursery than the local variety. Our average cost for trees ready to plant out in their permanent location is \$1.80 per thousand.

Favor Norway Spruce.

In 1912 we planted 10,000 trees out, in 1913 about the same number, in 1914, 145,350 and in 1915, 211,510. Practically all of the trees planted out have been Norway Spruce which seem to thrive well. Our only failure has been with red pine planted in the fall, a small plantation on poor sandy land, which was planted during a dry spell and in which about 50 per cent of the trees died. In general we have lost less than one per cent. Spruce seems to do equally well whether planted in the spring or in the fall.

Plantations have been made under all sorts of conditions and on all sorts of soil and we are securing a large amount of information and much valuable experience. Under-planting has been done on several tracts and so far shows excellent results. Spruce grows slowly for the first two years, 4 to 6 inches and then commences to grow at the rate of a foot and over a year. All of our recent planting has been done with the Jensen tree planter which makes it a good deal cheaper and loss is less. We can plant trees with this machine from two year old seedlings up to large four year old transplants, we generally use three year old seedlings. The larger plants are easier to handle with the machines. We use a crew of two, a man and a boy, with each machine; the man uses the machine and the boy carries a pail of trees and loads for the man. This work has now been pretty well standardized under the direction of Mr. H. A. Downs although we still hope to cut our costs somewhat. The record of our costs for the first plantation was, with purchased stock.

	Per 1,000
Cost of trees	\$ 3.00
Express .....	.39
Labor	7.29
Supervision	1.15
Incidentals .....	.08
	<hr/>
	\$11.91

Our plantations for 1915 cost as follows with purchased stock:

	Per 1,000
Cost of trees	\$ 3.00
Express .....	.279
Labor	2,799
Cartage .....	.029
Board .....	.087
Livery .....	.056
Supervision.....	.457
	<hr/>
	\$6,707

By using our own stock this cost can be reduced by about \$5.50 per acre. We usually plant 1500 to 1700 trees to the acre.

"A Million a Year."

We have so far only two difficulties, hares and hardwood brush. The former eat the tops of the young spruce and delay them for a year. Only a small proportion of the trees are eaten off and as soon as they get to be about a foot and a half high the danger is over. We keep them hunted down as much as possible. The hardwood brush on burnt and cut over lands grows so fast that the shade is excessive and this past summer we have tried pasturing our reindeer in our plantation with great success. They have eaten the brush off clean and the only damage to the planted trees has been a few killed in the roads which the deer make.

Our budget is based on planting a million trees a year, one for every one we cut and we look forward to a reserve of timber within six or eight miles of the mill which will be cheap to cut and deliver. The parish in which we have begun operations has made a contract with us not to raise the valuation or assessment on our planted lands for twenty-five years and shown a most broad-minded spirit. We employ as far as we possibly can only labor from this parish on our work on these lands so that the benefits are mutual.

We expect an average cut, when the timber is ready, of at least ten times the average which we now cut on our limits and this with the short haul to the mill and the better quality of the timber will make an extremely valuable asset.—*Canadian Forestry Journal*.

MEETING TO ATTEND.

The following annual meetings to be held in Ottawa during the next few days are of the utmost importance to pulp, paper and lumbermen, forest engineers and all who are interested in the conservation of our resources.

Commission of Conservation, Tuesday and Wednesday, January 18 and 19.

Canadian Lumbermen's Association, Wednesday, January 19.

Canadian Society of Forest Engineers, Tuesday evening, January 18.

Canadian Forestry Association, Thursday, January 20.

Civic Improvement League for Canada, Thursday, January 20.

RESUME OF THE MARKETS DURING THE PAST YEAR

(Special to Pulp and Paper Magazine).

New York, January 14, 1916.—The commencement of this year finds conditions in marked contrast with those at the beginning of last year, in practically every branch of the industry. Last January a state nearing somewhat to chaos existed. The country was suffering from the reaction of the great "bubble" which was caused by the outbreak of the European war. Following the start of the great conflict, the domestic markets were seized with a sudden scare. It was feared that ocean shipping would cease and that it would be impossible to get raw materials from abroad. The result was that there was a great deal of speculation in progress. Everyone bought freely of pulp, of rags and there was an artificial demand for paper of all kinds. Prices soared without reason and, within a few months manufacturers were over-supplied with raw stock and jobbers were loaded with various kinds of papers, for all of which they had no immediate use. When the trade awoke to the fact that conditions were not as they had suspected and that there was no cause for the boom, the markets "broke" and prices slumped remarkably. While the boom was still in session and while it was still possible for the Germans and Austrians to ship to this country, both of these belligerents cleaned out their quantities of stock. So that the new year, in 1915, found the trade in a very reflective condition. Everybody had bought too much and had paid too much. Business was poor and the prospects were not very encouraging.

This was the state of affairs which prevailed throughout the trade last January. Dealers in pulp were over-burdened with stock. It was stated at the time, and with apparently no exaggeration, that the docks and warehouses all along the Atlantic Coast were filled with pulp. As the consumers had on hand plenty of this material, there was actually no market for all of this stock. The result was that importers were compelled to use every possible means to try to get rid of their supplies. Pulp was offered at what are now considered the lowest prices ever recorded. Conditions even reached the stage where the buyer could make his own price and take the pulp. However, even under such considerations, business was poor and little pulp was sold. It was the same with rags. Up till about July, 1915, the market was dormant. The mills were well supplied with rags and refused to buy even at their own prices. So that the dealers in mill supplies were actually confronted with the problem of how long they could contend with the situation and still continue in business. The various kinds of papers acted in direct sympathy with the raw material markets. Paper makers found themselves loaded with stock for which there was no demand. As a result a period of price-cutting ensued which will long be remembered. In order to dispose of their paper, mills offered every sort of inducement to the buyers and sold regardless of cost, whenever a sale was possible. From authentic sources, it was learned that the makers of many kinds of paper were actually operating at a loss for several months. Many machines were shut down, some mills were compelled to become idle, while most of the others decreased their number of working days each week. This state of affairs existed from

January through the end of September. Tissues of all grades were as low as has ever been recorded. The competition in this line was very severe and, for a time, it seemed certain that several of the smaller mills would have to go out of business because of their inability to meet the low quotations offered by their competitors. News print was far from active. About the early part of April, a number of the mills in the Black River district were practically shut down because of labour troubles. However, even with this large tonnage out of the market, there was no shortage of news print and prices were far from firm. The fact is that news print was very weak. Manilas were inactive and so were fibres. Both of these papers were in poor demand and could be bought for practically any price. The mills making these grades were running at a poor capacity and surely not on a profitable basis. Kraft were exceedingly poor. They were regarded by some as really "hopeless". To say that paper bags were demoralized, is hardly expressive enough to describe the actual state of affairs. The prices on bags were slashed without regard to cost of manufacture, but this unreasonable method of getting business did not, in the least, stimulate things. The sale of book papers dropped off tremendously and prices acted sympathetically. This was, of course, due to the decrease in the volume of magazine advertising and to the great tendency of commercial houses to discontinue the issuance of catalogues and circulars. Boards reached their bottom. The mills were more or less idle and boards could be had for very low prices. In consequence of this condition of the board market, waste papers were very poor. The whole situation might be summed up in a few words: there was a general accumulation for which there was no market.

Just after the summer, signs of a change were obvious. From the various European countries and from all parts of the world a demand came for paper of all kinds and in large quantities. Shipping facilities were very poor and it was impossible to take care of all this business, but as much as paper as could be gotten together to meet the facilities was exported. As the German mills were unable to ship to South America and other parts of the globe, the demand for the fancy papers formerly supplied by the Germans was practically thrown upon this country. Thus it was that business activities commenced to revive. But this only affected a small number of the domestic mills. During the summer the stocks of pulp on our docks had been gradually diminishing. As they were not being replaced to any great extent, it became evident to the clairvoyants that it was only a matter of time before there would be a shortage of pulp. Abroad, the cost of making pulp had increased considerably. Coal had gone up, sulphur could not be gotten from Sicily, owing to the Italian embargo, so it had to be imported from the United States at a great cost. The other factors which enter into the manufacture of pulp all advanced in cost and some could be obtained only after great difficulty. The result was that the Scandinavians could continue to contract with domestic paper mills at the prices then current only at a loss. However, at this time, all of the countries which were for-

merly supplied with German pulp now entered the Swedish Norwegian markets with offers of high prices. The English started the upward movement of prices. Then the Germans themselves came in search of pulp offering to outbid any of the others. So it was that the Scandinavians found themselves with an unusually large market where it could obtain a price which could net a fair profit. From that time on the American market was altogether disregarded, so far as further contracts were concerned. By October, the large supplies of pulp which some of the mills had stored away began to show signs of depletion and several of the mills came out into the market. However, even at that date, it was well nigh impossible to contract for pulp with the foreign mills. Prices began to strengthen. However, the consumers, accustomed to the low prices, refused to meet the demands of the pulp men. And so the market advanced. Whenever the paper makers decided to pay the advanced quotations, a cable from abroad would announce that further advances had been effected. It seemed that the paper makers were just a little behind the pulp producers. Almost coincidentally, the markets were for the various chemicals started to boom, in which boom was also included rags and bagging. Imports of pulp, rags bleaching powder and other items of trade importance dwindled and were now growing scarce. In the meantime, general business had increased and the consumption of paper had improved remarkably. There was a big demand for everything, for tissue, for news print, manilas, krafts, fibres and the other kinds of papers. This, of course, brought on a flood of orders which forced the mills to increase their percentage of operation and consequently increase the consumption of raw materials of all kinds. Now the demand for pulp became urgent and, because of the shortage has been advancing in price up to the present time. The bleaching powder market became so sold up that it affected the cost of bleach sulphite tremendously. There was a big demand for bleaching powder for use in the manufacture of explosives. This forced the prices for this chemical from 11½c a pound up to the level of 13c a pound, which is being maintained at this time. There was a flurry in roofing rags which lasted through October and November and which was the start of the upward movement of rags. Today, the future of this market is splendid. The advancing of raw materials necessitated the increasing in the prices of finished papers. As the mills failed to see the actual color of the situation, they were somewhat slow in raising their prices, but it was eventual. At the present moment, paper is very high and is destined to go still higher. The market is active and all of the mills throughout the country are operating at full capacity with orders ahead. Mills which have been idle for many years, have been put into shape and are now making paper.

In this brief resume, it was impossible to touch on all of the matters of minor importance which tended to shape the tendencies of the markets during the year. It does, however, bring out clearly the great change which the industry has undergone in that period. The future, for the next few months, at least, seems certain. Business is in an excellent state. Paper is in big demand not only at home, but the inquiry for export is remarkably large and is increasing all of the time. In some of the markets, there is actually an over-sold production existing. News print is today in such demand that the actual surplus has almost dis-

appeared. Krafts cannot be had except at very high prices. This is due to the fact that kraft pulp is facing a famine. The pulp market must continue to grow more acute in its conditions. If Canada can get into position to supply this country with chemical pulp, there is no doubt but that American paper makers will find it the logical place from which to get their supplies. Waste papers have become active on account of the pulp situation and will most likely continue active vent these markets from continuing as we have stated, for some time. Only a miracle, so it seems, can pre-

Cedars of Lebanon

There are only about four hundred of the Cedars of Lebanon left. High up on the rocky slopes, Hadrian sculptured his imperial anathema against all who should cut these sacred trees. The Maronite peasants almost worship them and call them the "Cedars of the Lord," and a recent governor of the Lebanon has surrounded them by a great wall, so that the young shoots may not be injured by roving animals. Yet, century by century, their number grows less.

But these few are of royal blood. They are not the largest of trees, though some of the trunks measure over forty feet around. Their beauty lies in the wide-spreading limbs, which often cover a circle two or three hundred feet in circumference. Some are tall and symmetrical, with beautiful horizontal branches; others are gnarled and knotted, with inviting seats in the great forks, and charming beds on the thick foliage of the swinging boughs. The wood has a sweet odor, is very hard, and seldom decays. The vitality of the cedar is remarkable. A dead tree is never seen, except when lightning or the axe has been at work. Often a great bough of one tree has grown into a neighbour, and the two are so bound in together, that it is impossible to say which is the parent trunk. Perhaps the unusual strength and vitality of the cedars are due to their slow growth.

When a little sprout, hardly waist-high, is said to be ten or fifteen or twenty years old, one cannot help asking, "What must be the age of the great patriarchs of the grove?" It is hard to tell exactly. There have been counted, with the aid of a microscope, more than seven hundred rings on a bough only thirty inches in diameter. Those who have studied the matter deeply think that some of these trees must be more than a thousand years old. Indeed, there is nothing wildly improbable in the thought that perhaps the Guardian, for instance, may have been a young tree when Hiram began cutting for the temple at Jerusalem.

GOVERNMENT OWNERSHIP.

The outlook for the practice of forestry in Canada is vastly improved by the fact that the fundamental ownership of a very large percentage of non-agricultural lands has been retained by the Crown, instead of passing into private ownership, as has so largely taken place in the United States. Very seldom can private land-owners afford to hold cut-over forest lands for successive crops of timber. This is essentially a governmental function, on account of the long-time element involved.

INCREASED PRODUCTION AND FOREST MANAGEMENT

THE CALL OF THE HOUR APPLIES AS CLOSELY TO FOREST CROPS AS TO GRAIN CROPS

By R. H. CAMPBELL

Director of Forestry, Ottawa.

(In Canadian Forestry Journal)

Production is being urged strongly on the Canadian people at the present time from official and other sources in order that the burdens placed on the country by the war may be met and the necessary supplies furnished the Allies. While this advice has been given or interpreted to relate particularly to food stuffs it is as important and as necessary in regard to other natural products and particularly timber.

The importance of timber in the economy of any country is well illustrated by the following extract from a recent letter received from the Hague, Holland, from a Belgian:

"I would like to receive through your intervention some notes and details concerning the timber and construction materials of Canada.

"In fact our little Belgium will have suffered much in consequence of the great European catastrophe and it is for us Belgians to think from now on as to the reconstruction of all this.

"After the war we will be obliged to utilize mainly the materials of our Allies or of the neutral countries. Timber will play a great part in the reconstruction of our country."

"Will It Pay?"

Belgium, with a population of nearly 600 to the square mile, has a forest area of 1,288,000 acres out of a total area of 7,275,000 acres and was increasing the forest area. The Belgian forests were a paying proposition but that is not the sole reason for having them. The even stronger reasons are expressed by Mr. N. I. Crahay, the Director General of the Belgium Forests, in reply to an enquiry as to whether forestry pays:—

"Ah! you English, you always want to know will it pay? In Belgium we look at the matter differently. We realize that the afforestation of waste lands affords an enormous amount of healthy work to the Belgian people work required just when otherwise the men would be unemployed. We realize the importance of providing a large amount of home grown timber in view of the depletion of the world's timber supply, and we think too of the beneficial effects of forests, not only upon climate but upon the soil of the waste lands to the great advantage of the country."

The importance of the forest and its products in the economy of Canada is illustrated from the report of the last census which shows that there were 4,999 establishments engaged in making timber or lumber or in its remanufacture; that the capital invested in them was \$260,000,000; that there were 110,000 employees receiving \$39,379,000 in wages; that the cost of the materials was \$94,000,000 and the value of the product \$185,000,000. This group is the largest among the divisions of the census table of industries in capital invested, number of employees and wages paid, and is second in number of establishments, cost of material and value of products.

And even this does not include all the industries that use forest products for in other divisions are manufactures such as paper, vehicles, boats, agricultural imple-

ments and others in which large quantities of wood are used. In addition the firewood, the maple syrup and sugar, the handy supply for many purposes which helps out the farmer, makes us feel like echoing Mr. Crahay's words and applying them to Canada.

Government Gets Seven Millions.

The export of forest products and manufactures of wood (not including those only partially made of wood) in the fiscal year 1914-15 was valued at \$53,344,616.

The revenues received by the different governments of Canada directly from the forests during the year 1913 were \$7,433,770, so that their direct contribution to the public finances is important.

Greater production of timber may be brought about by three special means: (1) Protection: (2) Replanting: (3) Forest Management.

When greater production of agricultural crops is urged it means mainly putting a greater area under crop, the preparing of land, the sowing of seed.

The production of timber in Canada means largely the protection of a crop in various stages of development which has been sown and grown by a kindly providence and which we are only asked not to destroy. As the planting of the forest has cost us nothing in labor or in money we view with equanimity its destruction at all stages of immaturity and think there is no loss, never realizing, as has been well said, that the destruction of a forest crop is just as serious at any stage of its development as the destruction of an agricultural crop, and to say that there is no loss when trees of ten or fifteen years of age are burned up is as foolish as to say that a crop of wheat would be no loss if it were burned or haled out in July before it was fully matured.

Education a Real Cure.

Production by the means of better protection is still far from perfect in Canada. Every year the losses are considerable and in the dry years they are always heavy, not always so much in the mature growth but in the immature stands that are making the most rapid production. The efforts of the Forestry Association, the Fire Preventive Associations, and the government departments have brought about improvements in protection but even yet the indifference and carelessness which cause disaster are appalling and the need for public education on this subject—the only sure means of accomplishing it by removing the cause—is pressing. Until practically every child in the country is ready to help in this form of production by doing his share in protection the appeal for greater production will be unavailing.

And while the individual may well take to heart the demand for more production the urgency is as great on those charged with the administration of the forests to organize on such a basis of permanent policy that the production from them may be permanent and uninterrupted by loss from fire or other causes. It is becoming increasingly clear that in all matters that affect the

future of this or any other country there must be a looking forward and a present preparation for the needs of the future. Colonization should be so directed as to become permanent instead of shifting, agriculture should not result in impoverished land and its abandonment, the forest should be permanently producing, not evanescent. While the government urges on the individual the duty of greater production it should bend its own efforts in the same direction on the public domain.

Using the Waste Lands.

Production may be increased by planting a forest where none now exists, and it is in the doing of such work that we may realize how fortunate we are in that nature has done so much of the reproducing of the forest for us without our effort. By the cheapest methods that will have any adequate success reforestation on denuded land may be carried out at \$7.00 to \$12.00 per acre, and the returns at this rate are well worth while. Belgium, before the war, was planting waste land at a cost of \$20.00 per acre and considered the investment a profitable one. There are unfortunately many miles of waste land in Canada where replanting will be required. Such work has been well begun by a few private owners and the success attending the efforts of some of these, and also of the governments of Ontario and Quebec have been already described. The Dominion Government has assisted largely in the planting of trees on farms in the prairies and is now using the nursery developed for this purpose to supply stock for a vigorous policy of reforestation on denuded public lands which is being inaugurated.

Management Needed.

Production can be increased by proper forest management. It is not realized what an increase in production may be made by proper management of a forest but the examples from European practice are abundant of forests where the quantity and value of the production have been steadily increased through a series of years without a diminution and with even an increase in the stand itself. As an instance is the small forest of Couvet in Switzerland comprising 345 acres. It was put under the technical management in 1883 with the result that in 1913 the annual cut had increased from 42.36 cubic feet per acre to 128.49, or three times the quantity; that the quantity of large timber in the cut had increased from 18 per cent to 30 per cent, and that the timber standing on the ground had slightly increased in quantity. That similar results are obtained over large areas and districts in Europe accentuates the possibilities. The low average production in Canada per acre as a result of the condition of the greater part of the forests shows that there is a large field for increasing production in this natural product. Outside of a few tentative efforts on small tracts no effort has been made in Canada to increase production by this means but the foresters of the Dominion are turning their attention towards it and studying the conditions that can be developed to bring it about. The ordinary man looking at such a productive forest may see and appreciate little of the knowledge and effort necessary to evolve such a forest, but it demands as high technical qualifications, as through knowledge of conditions and as careful calculation and management as do the problems of any other profession.

Development of the production, and as part of it, the improvement of the condition of the natural resources of Canada is the duty of the hour and not less with the forest resources, which affect public and domestic economy very vitally, than with any other, and a clear appreciation by public administrations and private citi-

zens of the possibility and the necessity of such production and the means by which they can co-operate in it is an absolute necessity in order to bring it about.

Timber revenue in Canada for fiscal year ending 1913:

Timber and Grazing Branch (Dominion)	\$ 431,196.60
Quebec.	1,510,171.41
British Columbia.	2,832,788.00
Ontario.	1,979,125.81
Nova Scotia (Crown Lands Revenue) . .	18,459.80
New Brunswick.	662,031.00

Total. \$7,433,772.62

Paper Trade Prospects

Canadian Industries Have Achieved a New Position in the World's Trade—In Newsprint Canada Destined Soon to Lead the World.

(E. B. BIGGAR, in the Annual Financial Survey of the Toronto Globe.)

If the pulp and paper industries of the world have been tossed hither and thither in the maelstrom of war during the past year, it can be said of the Canadian sectors of these industries that they have never once been submerged, but have kept to the surface, and in spite of all the uncertainties of prices and conditions have to-day achieved a position it will be difficult for any country to depose them in time to come.

In the department of paper for the newspaper press, in particular, Canada seems destined soon to lead the world, because of the three prime factors of cheap water power, enormous reserves of pulpwood timber and native skill in woodcraft, in which this country stands unrivalled.

With the completion of the Abitibi Power & Paper Company's mill in New Ontario this year, the total production of newsprint paper in Canada has been increased to about 2,000 tons per day. This is now over six times the production of the United States when measured according to population. It is not many years since the mills of Canada produced less than the presses of this country consumed, but to-day they supply the home demand and have a surplus of 1,500 tons a day for export. There are also large and increasing exports of other paper, such as book, writing, kraft and other classes, besides mechanical pulp, sulphite pulp and kraft pulp.

Exports Were Heavy.

To gauge the success of Canada in meeting the strain of war it may be stated that in the first twelve months of the war—that is, August, 1914, to August, 1915—the exports of Canada in all kinds of paper amounted to \$17,043,096, against \$14,279,954 in the preceding twelve months. Besides this the pulp mills of Canada exported pulp to the value of \$9,367,467, an increase of nearly two millions over the previous twelve months. The tonnage of chemically-made pulp exported by Canada will amount this year to 110,000 tons, and the whole Canadian pulp and paper industry consumes now about 1,500,000 cords of wood annually. In addition to this there are about 900,000 cords of pulpwood exported to the United States, of which a little over two-thirds is cut in the Province of Quebec alone. In the past year or two there is a noticeable decline in the exports of raw pulpwood—for which the sole market is the United States—but

this is simply an indication of the fact that the Canadian industry has reached a stage where it has been proved to be better to convert the raw material into pulp and paper in Canada rather than elsewhere.

While Canadian newsprint is finding a market in most civilized countries of the world, a considerable portion of these exports go abroad through United States channels, and this accounts for the circumstance that in the twelve months ending August \$14,279,954 of our exported paper products found their immediate destination in that country.

The unsettling conditions resulting from the war, especially the shortage of coal, the high cost of ocean freights, and the high and fluctuating prices of chemicals and other supplies, made manufacturers cautious not only in Scandinavia but in the United States and Canada. Consequently in the first half of 1915 the Canadian output of pulp and cheap papers was about twenty-five per cent less than full capacity, while the output of the United States went below that proportion, the mills on newsprint running only five days a week for a considerable time.

As the European and American markets were cleared of stocks this situation changed, and since September the Canadian mills in all branches have been running on contracts that will take up their full capacity for going ahead with all the more confidence since it has become evident that Germany is in straits for both pulp and paper, and has now to resort to her own forest reserves. Not only are the Finnish and Russian sources closed to her, but trade even with Scandinavia is crippled by the activities of British and Russian submarines, while the famine in coal and chemicals renders steady and profitable production in Norway and Sweden almost impossible.

While all these conditions and the complete strangulation of the German exports of paper have thrown the world's paper markets into such disorganization, it is not surprising to find Canadian manufacturers receiving inquiries for paper and pulp from countries with which no trade has heretofore been done. This applies not only to pulp and newsprint, but book, bond, writing, wrapping, tissue, kraft and other kinds.

New Lines of Trade.

Another interesting development of the year is that Canadian mills are taking up certain new specialties for the production of which Canada and the United States have hitherto been completely dependent on Germany. One Canadian mill is now making vegetable parchment paper, another grease-proof papers and a transparent paper known as glassine, another some new lines of pulp boards, another new classes of enameled paper, another new kind of crash and linen-finish papers, etc. By a judicious plan of harmonizing the productions of Canadian and United States mills, these new ventures, born in the war, can be maintained and developed afterwards.

An important issue of the war which will develop trade with other parts of the British Empire is reported from Australia, where representatives of the Australian Press Association waited on Premier Fisher and urged that the duties be taken off paper from Canada, and it was suggested that if these duties were removed Canadian manufacturers would be glad to take over all the running contracts now held by German, Swedish and Norwegian mills. In his reply the Premier said the Australian Government was willing to arrange a reciprocity treaty with Canada by which

Canadian papers could be included in the list of free imports. Such a treaty would be welcomed in Canada as an immediate advance towards a great British Imperial trade Zollverein, which would mean a vast expansion of the overseas trade of Canada.

The only present cloud on the horizon of the pulp and paper industries of Canada is the unprecedented high prices of many essential chemicals and supplies. Some of these materials are from twice or three times up to ten or twenty times their price a year ago. Although some of these chemicals will soon be made in Canada, the United States and Great Britain, time and patient labor will be required to produce others. Yet there is no problem of this sort that cannot be solved by skill and application.

Ottawa Notes

Ottawa, Ont., Jan. 14th—That either war conditions, or the increased tariff of last year, have cut down Canadian imports of pulp and paper to a very great degree is evident from figures furnished by the Customs Department for the eleven months of the past calendar year ending November 30.

In no item is the decrease in shipments into Canada more evident than in the case of wallpaper. During the eleven months period mentioned total imports of wallpaper were 191,142 whereas during the preceding twelve months the total was \$436,317. Of this total \$167,388 was imported from the United States and \$21,892 from Great Britain.

Imports of paper manufactures, listed as N.O.P. (not otherwise provided) dropped to \$1,473,704 during the eleven months of 1915 as compared with \$2,482,212 during the twelve months of 1914. United States furnished by far the greater proportion of this import, \$1,098,794, while from Great Britain was shipped \$284,288.

Imports of tarred or other building paper were also much less than in 1914, the 1915 figures being \$188,535 for eleven months as compared with \$513,004 in the twelve months of 1914, United States furnishing \$188,247 of this total.

Wrapping paper imported into Canada for the year of 1915 up to November 30 was valued at \$115,190, as compared with the import during the full year of 1914 of \$214,585.

There was another decrease in imports of paper of all kinds, N.O.P., the total 1915 import for eleven months being \$1,046,986 as compared with \$2,213,470 in 1914.

Imports of printing paper valued at not more than 2¼ cents per pound, totalled only \$3,370 in the eleven months of 1915 as compared with the much larger total in the year 1914 of \$141,363. Imports of printing paper, N.O.P., in eleven months of 1915 were \$233,209 as compared with \$674,291 in 1914.

Wood pulp was imported up to November 30 in 1915 to the amount of \$395,144 as compared with \$404,561 in 1914.

Plans are being prepared, it is learned, for the organization of an association among lumbermen and pulp manufacturers on the Upper Ottawa River with a view to securing adequate protection for their limits against forest fires. The proposed body will be similar to the Lower Ottawa Forest Protective Association and the St. Maurice Valley Association of the same kind. With the gradual settlement of the land in which are situat-

ed the limits owned by the prospective members of the new organization, the fire loss is gradually increasing and the necessity for protection against it is becoming greater. The idea is to construct trails, lookout stations and telephone lines through the limits in the Upper Ottawa, establish a patrol system and undertake the prosecution of those who by their carelessness endanger the safety of valuable timber.

A new gasoline pump for fighting forest fires in inaccessible spots is now being tested by the Dominion Parks Branch with a view to its general adoption by Canadian foresters. The machine weighs only 375 pounds and is capable of being carried by two men. In spite of its comparative lightness, however, it will pump twenty gallons per minute through 1500 feet of hose to a height of 85 feet above the water supply.

A statement issued by the minister of customs last week to the effect that Canadian paper manufacturers and others who use logwood dyes will be assured of a reasonable supply of them from United States manufacturers of such coloring matters, has been greeted with great interest and relief by the pulp and paper trade. The statement also makes it clear that the reason for declaring the recent embargo on logwood from the British West Indies was to secure control of the product for the Empire. Now that this has been done the export of 4,700 tons of logwood to the United States is to be allowed on condition that they supply the seasonable needs of Canadian manufacturers. Further negotiations are under way which it is hoped will result in a workable arrangement by which a reasonable supply of goods from the British West Indies will be allowed to be exported to the United States dye manufacturing companies, coupled with conditions which will ensure a supply of the same for Canadian manufacturing purposes.

The Spanish River Pulp and Paper Mills, Ltd., last week won its case before the Railway Commission in the matter of overcharges on machinery shipments. The company complained that the Canadian Pacific Railway had refused to settle its claim for overcharges on machinery shipments from Massachussetts points and also from Ansonia, Conn., to Espanola, Ont. The railway charged 33 cents on the shipments whereas under the tariff under which the shipments were supposed to move the rate was 25 cents. The railway claimed that as this tariff was subject to the jurisdiction of the United States Interstate Commerce Commission it had no right to apply it to an intermediate Canadian point but this contention was not upheld by the Railway Board.

Plans have been filed with the Public Works Department at Ottawa for various boom works on the Upper Ottawa which will improve that stream as a carrier for saw timber and pulpwood. The Upper Ottawa Improvement Company, Limited, the organization which attends to such matters proposes to construct piers and booms at four points in the river known as Culbute, Culbute Chenail, Rocher Fendu and Reid Island, in Quebec and Ontario.

WORTH JUST AS MUCH HERE!

Cable reports from London recently included an interesting item which illustrates the tremendous increase in prices of dyestuffs on the other side. A keg of methylene blue was offered at a sale of lost property at the Midland Railway. The keg, weighing 150 pounds, and worth \$60 before the war, was eagerly bid on and fetched \$1,500.—The Paper Mill.

Japan's Paper Trade

Japan in 1914 imported 45,342 tons of pulp worth £466,900, and 47,477 tons valued at £471,700 in the previous year. Of her total imports over £400,000 worth came from Norway, Sweden and Germany. Canada's share amounted to £35,000, but with Germany out of the running this country should do much better.

The following tables shows the values of the imports into Japan of pulp, paper and paper manufactures in 1914, as compared with the previous year:

	1913.	1914.
Pulp	£471,700	£466,900
Paper—		
Drawing	15,000	12,700
Imitation Japanese	81,500	73,700
Pasteboard or cardboard	40,100	33,400
Photographic	30,500	28,600
Printing	361,900	210,000
Writing	45,200	35,700
Books	63,000	51,400
Other paper etc.	222,100	154,300

Total £1,331,000 £1,066,300

The countries from which paper was imported into Japan, and the respective values, are shown as follows:

	1913.	1914.
United Kingdom	£219,900	£149,000
Germany	259,800	176,500
Austria-Hungary	36,300	16,000
Belgium	47,600	21,700
United States	29,900	16,700
Sweden	103,900	91,300
Other countries	41,400	27,700

Total £738,100 £498,900

The total exports of paper and paper manufactures from Japan amounted in 1914 to £480,400, as compared with £554,800 in 1913.

As regards paper, there was a falling off for the whole group of £240,000—from £738,800 to £498,800. The reduction was general, and was to be found not only in every class of paper but in the case of each of the supplying countries. Germany remained at the top of the list with £176,500, a position from which it should be easy for the United Kingdom to displace her. The United Kingdom came second with £149,000 and Sweden third with £91,300.

The Japanese paper industry has made great strides lately, and will doubtless continue to do so when the new machinery installed last year comes into operation. During 1914 paper making machinery to the value of £61,000 was imported, as compared with £19,300 in 1913.

Printing paper remains the most important line of imported paper, but certain Japanese mills are increasing and improving their output, and there is already even a considerable export. Art paper is not yet produced in Japan, but in the case of writing, drawing, packing and match papers the native makers are working hard to compete with the foreign article, and even blotting paper, which is not specially mentioned in the returns, is now being turned out in considerable quantities.

France is able to manufacture but 50 per cent of its match requirements and has been importing large quantities of matches from the United States.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine.)

Owen Shepherd, treasurer of the International Paper Company, who was recently made auditor of the Grand Lake Company, manufacturers of bags and toilet papers at 18 East 41st street, New York, has been appointed secretary-treasurer to fill the position left vacant by the resignation of George E. Mullen. On January 1 the offices of the Grand Lake Company were moved to 30 Broad street, where the company will occupy rooms 516 and 520, on the fifth floor.

* * *

During the present week, a company known as The Acme Paper Curing Company, has filed articles of incorporation in the state of Michigan, with a capital of \$1,000. The company proposes to manufacture and sell paper curing devices and necessary parts and to provide material and equipment. The incorporators are Edward W. Adams, of Kalamazoo, and Judge John W. Adams, of Kalamazoo.

* * *

George F. Perkins, one of the pioneer paper merchants of New York City, died on Monday, January 3, at his home, 625 Bergen avenue, Jersey City. Mr. Perkins celebrated his eightieth birthday on December 16th. Mr. Perkins retired from the firm of Perkins, Goodwin & Co. thirteen years ago. For over a third of a century he held a prominent place on the trade and was highly regarded by paper men. While attending to his very large business interests in New York, he somehow found time to establish for himself as a banker in Jersey City, where he made his home.

* * *

The Paper Trade Journal in its last issue says the following about the News Division of the American Paper & Pulp Association. "There are signs that the News Division of the American Paper & Pulp Association will, after the annual meeting in February find offices for itself apart from the headquarters of the parent organization. In this event the American Paper and Pulp Association will lose a considerable source of revenue and have its activities curtailed thereby. The secession movement, which began when the book men withdrew a few years ago, resulted in a segregation of interests within the association, each separate unit organizing by itself and running its own affairs but still maintaining a nominal membership in the parent body. With the news men now following the lead of the book men, it remains to be seen what measures will be taken to replace the financial support thus lost. This and other matters connected with the A. P. & P. A. will no doubt receive due consideration at the annual divisional meetings in February."

* * *

Arrangements for the banquet of the American Paper and Pulp Association are now in the course of preparation. The following have been appointed to serve on the committee: H. W. Stokes, The York Haven Paper Company, Philadelphia, Pa.; M. S. Flint, Berlin Mills Company, New York City; S. Z. Upham, Brownville Paper Company, Brownville, N.Y.; Jas. G.

Taylor, Taylor-Logan Company Papermakers, Holyoke, Mass.; G. E. Greene, Niagara Paper Mills Lockport, N.Y.; I. Kuhe, Continental Paper Bag Company; Alfred Frank, Rose & Frank Co., 136 West 21st street, New York City; W. G. Shortess, Haverhill Box Board Company, Haverhill, Mass.; M. Plum, Jr., United Paperboard Company, New York City; B. A. Franklin, Strathmore Paper Company, Woronoco, Mass.; Alton Faunce, Southern Paper Company, New York City; N. E. Zeutgraf, Louis DeJonge & Co., C. A. Dunklee, Cleveland, Ohio; G. Frank Merriam, Holyoke Card & Paper Company, Holyoke, Mass.; W. B. Van Allen, Carthage Sulphite Pulp and Paper Company, Carthage, N. Y.; E. B. Murray, Union Bag and Paper Company, New York City.

* * *

Approximately 1,400,000 tons of flax straw are destroyed annually on American farms. At the same time the country is importing large quantities of flax waste from foreign countries for paper manufacture. The inconsistency of this situation has lead specialists of the United States Department of Agriculture to investigate the feasibility of using home grown straw in the paper and fiber-board industry. The results of the investigation have just been published in bulletin No. 322. At the present time about 2,200,000 acres are devoted to the raising of flax chiefly in North Dakota, Minnesota, seed from which linseed oil is manufactured. The annual crop amounts to about 20,000 bushels of seed and is valued at approximately \$33,000,000.

* * *

Acting for the bondholders of the Battle Island Paper Company, S. A. Daley, of Syracuse, N.Y., recently sold the sulphite plant of the company to N. L. Whittaker, a real estate man of Fulton, January 4th last, when it was sold at public auction, by the trustees in bankruptcy, for about \$28,000. It is believed that Mr. Whittaker is acting for several Fulton business interests. The plant has been idle since the company went into bankruptcy about two years ago, and it is hoped that the plant may soon be operated again in the manufacture of sulphite pulp.

* * *

The Babcock Paper Manufacturing Company of Otsego, Mich., has been taken over by the recently organized Wolverine Paper Company. The new company has completed its organization and the officers are: President, A. G. Gilman; vice-president, Ferry K. Heath; treasurer, A. A. Wheat. The new company has a capital of \$150,000. The plant at Otsego produces wax and tissue papers, have two machines.

* * *

Th Bryant Paper Company, of Kalamazoo, Mich., plans to erect a new two-machine mill this year. The estimated cost of this improvement is \$450,000. It is proposed to install two machines each of 154 inch size. This will make the Bryant Company a twelve-machine mill, ten big machines already being in operation.

Representative Steenerson, of Minnesota, recently introduced a bill in the House to repeal. "An Act to promote reciprocal trade relations with the Dominion of Canada, and for other purposes," which was approved on July 266, 1911. Should such action be taken by Congress it would have a great effect on our pulp and paper trade.

* * *

Considerable interest was manifested during the past week in the announcement made in New York City by President John S. Riegel, of The Union Bag and Paper Company, that this company would build a newsprint mill, a sulphite mill and kraft pulp mill at Cap Madeleine in the Province of Quebec, is causing considerable comment in the trade. According to information received the machinery for the news mill has already been ordered and work on the construction of the building will begin at once. It is hoped to have the plant in operation by July 1st. In its new enterprise, The Union Bag and Paper Company has every possible advantage that may be considered necessary for the success of such an undertaking. When the sulphite mill is completed, the company will have its own strong sulphite resources, thereby placing within its own reach all of the raw material necessary for manufacture. The product of the kraft pulp mill will be largely for the consumption of the company itself.

* * *

Important changes that have just taken place in the American Writing Paper Company at Holyoke, Mass. These changes took in the resignations of four high officials and the promotion of five other officials to assume their duties. Those that resigned are as follows: James W. Toole, general superintendent; James B. Stewart, assistant general superintendent; Amos P. Hawley, manager of the George C. Gill, and the Mount Tom Paper Company divisions, and Edward T. Wilson, manager of the Norman and George R. Dickinson divisions.

* * *

The Wandel Screen Manufacturing Company of East Walpole, Mass., announces that it has joined forces with the machine departments of Bird & Son, and well-known paper makers of that place, and formed the Bird Machine Company. The present officers of the Wandel company will assume the same duties for the Bird Company as follows: Charles S. Bird, president; Herbert H. Miller, treasurer; Ralph S. Clarke, manufacturing manager; Phillips Dennett, sales manager.

Orders are shortly to be placed for \$40,000,000 of Canadian lumber for Great Britain.

The sneeze-wood tree is a native of Natal and other parts of South Africa. Its odd name was given to it because one cannot saw it without sneezing violently. The dust of its wood has just the same affect as the strongest snuff, and is so irritating to the nose that workmen are obliged to sneeze even when they are planing it. If a piece of wood of this tree is put in the mouth it is found to have a very bitter taste, and no doubt it is this bitterness which prevents insects of any kind from attacking the timber of the sneeze-wood tree. The fact that insects find it so disagreeable makes its wood very valuable for work that is required to last a long time.

WOOD PULP AND WOOD PULP BOARD PRODUCTION OF SWEDEN.

The first official statistics relating to the wood pulp industry in Sweden dates back to 1886, when only one mill existed, employing 45 hands, and with an output valued at 107,350 kronor. In 1868 the total output of wood pulp was only 1,320 tons.

The latest official returns for the wood pulp and wood pulp board industry of Sweden are those for 1913. According to them, 1,186,577 tons of mechanical and chemical wood pulp, valued at 126,000,000 kronor, were produced. In estimating the wet pulp it was reduced to dry weight. The exportation of these qualities amounted to 847,837 tons, the balance being used by Swedish mills. Mechanical wood pulp only was produced in 83 mills during 1913. Thirteen mills produced mechanical wood pulp in addition to sulphite. Three mills manufactured mechanical pulp in addition to sulphate, and one mill manufactured mechanical pulp, sulphite and sulphate. Forty-nine mills manufactured sulphite only, seventeen manufactured sulphate only, and one mill manufactured sulphite and sulphate combined. The number of grinders employed was 388, in addition to 256 sulphite digesters and 93 sulphate digesters.

Several large mills are now being erected.

The following detailed table of mills is taken from the Swedish Board of Trade publication on Swedish industries during 1913:—

	No. of Mills.	No. of Men.
Wood pulp mills only	114	11,185
Wood pulp mills combined with pulp board factories	13	760
Wood pulp mills combined with paper mills	30	7,520
Wood pulp mills combined with pulp board and paper mills	11	3,205
—Swedish Chamber of Commerce Journal.		

THE RUSSIAN PAPER TRADE.

According to The Times, the Russian paper trade is in a bad way. The stoppage of the Waldhov factory at Pernow, which produced 96,000 tons of cellulose a year, and the German occupation of the Wacławsk cellulose factory, which turned out 32,000 tons of cellulose annually, have deprived the Russian paper industry of 50 per cent of the cellulose manufacture. Consequently, the paper mills are obliged to turn to Finland, Norway, and Sweden for this commodity, paying for the Finnish article a duty of 45 kopeks and for the foreign 62 kopeks per pound (1¼d. and 1¾d. per lb.), not counting freight and Customs charges. Owing to the increased demand on the part of the Russian paper mills, and notwithstanding the entire absence of areas of timber and skilled labourers, the manufacturers believe that in view of such unfavourable conditions, it will be hardly possible to expect a considerable development of the paper industry in the near future.

PAPER FROM SEAWEED.

After ten years of experimentation, an Englishman, Thomas Ingham, of Liverpool, claims to have developed a non-porous paper from seaweed, useful in the manufacture of cinematograph films, being non-inflammable, water and germ proof, and odorless.

PULP AND PAPER NEWS

Toronto, January 14.

Andrew Denholm, who was one of the pioneer publishers of the province, died recently at his home in Blenheim, Ont., aged sixty years. At one time he managed a paper in Kincardine and established the daily Standard in Woodstock, Ont. He retired from the publishing business some eleven years ago.

D. F. Robertson, general manager of the Northumberland Paper and Electric Co., Campbellford, was re-elected Reeve of that village at the recent elections.

Under the present system of fireguarding in British Columbia and at the present rate of consumption, it is stated that there is no cause for undue concern, for the yearly growth as yet far exceeds the annual cut of timber of all kinds. About a billion and a quarter feet are logged every year, while the annual growth is estimated to be about six billion feet. A considerable amount is killed by fires, but not so much actually burned as the fires generally leave much standing that can be logged and put to good use. The last season was a particularly bad one for fires, and the summer of 1915 was the driest on record. In consequence of this, fires ranged fiercely over many districts burning over 108,000 acres in all. Cruisers have estimated that, in these conflagrations, 23,000,000 feet of timber was "killed," but of this 20,000,000 can be saved so that the loss is not so serious as it appears. The system of fire ranging in operation is working efficiently and efforts are being made to equip the guardians of the forest with still better implements with which to wage war against fires.

The Arnprior Felt Co., Limited, Arnprior, Ont., manufacturers of pulp and paper felts, recently assigned to W. A. Cole, of Ottawa.

Death has been busy in the paper ranks of Toronto during the past few weeks, calling no less than three esteemed representatives. In the last issue mention was made of the passing of Thomas G. Wilson, head of the firm of Wilson, Munroe & Co., Limited, York St., Toronto, and of T. A. Staunton, President of Stauntons, Limited, wall paper manufacturers, Toronto, and eldest son of the late Moses Staunton, who was in his fiftieth year. Robert Campbell Brayley, who was also widely known in the paper arena having for some years been in business for himself in Toronto, was called a few days later. He was travelling representative of Doon Twines, Limited, of Doon, Ont., visiting the trade in all the principal cities in Ontario, Quebec and New Brunswick. His wife died twelve years ago, and he is survived by three sons and two daughters.

A by-law was recently carried in Stirling, Ont., granting a bonus to a new company, Wallace, Chapman & Marshall, of Oakville, Ont., which will make cheese boxes, baskets and wood veneer work. The village will erect a factory, which will remain the property of the corporation for ten years, after which it becomes the possession of the company, providing it has been operated all the time. During the first five years the com-

pany is to be exempt from taxation except school taxes.

The Record Publishing Co., of Niagara Falls, Ont., has been granted a charter with a share capital of \$40,000 to acquire the printing and publishing interests formerly conducted by J. E. P. Rothwell and to carry on a general business in that line.

The Western Canada Timber and Fuel Co., Limited, has been incorporated with a capital stock of forty thousand dollars and head offices in Fort Frances, Ont. Among the provisional directors are Porter B. Elliott and Thomas Delaney, lumbermen. The company is empowered to carry on the business of timber merchants and saw-mill proprietors, and to deal in all kinds of timber and wood, and to acquire and lease timber limits and concessions.

An official arbitration has begun in connection with the claim of W. J. Gage, President of the Kinleith Paper Mills, and W. J. Gage and Co., Toronto, in connection with the grading of Bathurst street. Mr. Gage asks \$32,000 from the city if the wall is removed and \$60,000 if it is not. His property is located at the corner of Bathurst St. and Davenport Road. P. H. Drayton, K.C., is the official arbitrator.

The award of P. H. Drayton, K.C., official arbitrator, Toronto, fixes the value of the lots owned by T. H. Watson, former president and general manager of the Spanish River Pulp and Paper Mills Co., and located at the mouth of the Humber river, at \$52,550. The property was, under the agreement with R. Home Smith, expropriated by Toronto, in connection with the proposed Humber Boulevard, and consists of twelve acres on the north side of the G. T. R. tracks. The property was purchased some twelve years ago by Mr. Watson for less than five thousand dollars, and at the recent arbitration, the valuations of expert witnesses were heard on both sides. Those for Toronto estimated the value from \$27,250 to \$49,300, while those for Watson declared that the property was worth from \$133,070 to \$241,853. The award of the arbitrator was for \$52,550.

The tissue mills have withdrawn quotation owing to the general increase in prices of raw materials and the present congestion of orders. Some paper box manufacturers, due to the high cost of board of all kinds, have sent out notices that, while they have not increased prices, they have abolished the usual terms of discount, and henceforth all buying by customers will be on the basis of net thirty days.

The Canada Paper Co. have sent out to their customers and friends a handy desk diary for 1916 printed on samples of the various lines of paper manufactured by the firm telling of the size and weight and kinds carried in stock. The company have, during the past year, improved their plant in many ways at their St. Francis mill, Windsor Mills, Que.

The plant of the Martin Corrugated Paper Box Co. on Pape Ave., Toronto, which was visited by a serious fire on Christmas eve, is once more filling orders and temporary premises have been engaged, while other

concerns have come to the assistance of the company so that there has been very little interruption of their regular business. Plans have been drawn up for the construction of a much larger factory than the one destroyed, on which work will soon be begun and the last word in equipment will be installed.

Arthur T. Wilgress, King's Printer of Ontario, and until recently publisher of the Times, Brockville, is taking up his residence in Toronto, and was presented by his many friends with a cabinet of silver as a mark of appreciation and esteem.

John Martin, of the John Martin Paper Co., Winnipeg, spent a few days in Montreal and Toronto this week, calling upon the trade. He reports that business has greatly improved in the west, and the outlook for the company is particularly bright.

Gummed Papers, Limited, Brampton, Ont., report that their output for the year just closed more than trebled that of the previous year, and the outlook for the coming season is particularly bright. The capacity of the plant has recently been increased about fifty per cent. The company have added to their list of products cloth lined paper and water proof papers, and have installed a paster and a 48in. Clark sheet cutter.

The Ontario Paper Co., Limited, of Thorold, are, it is understood, preparing plans for a thirty ton sulphite mill, and construction will start in a few weeks.

C. Nelson Gain, superintendent of the Don Valley Paper Co., Limited, who has been ill with an attack of la grippe and tonsillitis, is able to resume his duties.

An addition is being erected to the office of the Lincoln Paper Mills Co., at Merritton, which will give much needed accommodation.

W. J. Findlay, of the Strathcona Paper Co., Strathcona, Ont., spent a few days in Montreal recently. The past year has been a very good one in the building and sheathing paper line with his mill, and prospects are most promising.

Two sons of I. D. Bradshaw, of Bradshaws, Limited, waxed paper manufacturers, Toronto, have joined the colors, and are now on the way to the front. They are Lieut. R. D. Bradshaw, who is a member of the new Hamilton battalion, and Lieut. W. J. Bradshaw, who is with the 30th battalion.

Thomas Gibson, who is a director and secretary of the Spanish River Pulp and Paper Mills, Toronto, will be in charge of the Ingersoll Company of the Oxford County Battalion. Captain Gibson, who is an old Ingersoll boy, is well and favorably known in that town, and it is expected that he will be an important factor in the recruiting campaign. He addressed several meetings held during the past few days.

In the recent municipal election in Thorold, James Wilson, who is the superintendent of the plant of the Thorold Pulp Co., headed the polls as an alderman. He is a man of force of character and independent thought, and many friends are congratulating him on his success.

The Foley-Rieger Pulp and Paper Co., of Thorold, Ont., have had a satisfactory year in the ground wood line, and are now catering to the book and writing mills with a bleached ground wood, for which process they have patents in both the United States and Canada. A splendid trade has been worked up, and the prospects for the future in this commodity are good.

It is reported in Thorold that the ground wood plant of the Inland Pulp and Paper Co., which has been idle for some time, may be taken over by parties representing the American Writing Paper Co.

Hon. Frank M. Hugo, of Watertown, N.Y., secretary of the Remington Paper and Power Co., will give an address at the annual meeting of the Ontario Motor League in Toronto on January 18.

The Canadian Vegetable Parchment Paper of St. Catharines, are making progress in their arrangements and expect to have their lines on the market early in the spring.

A FAILURE IN TREE-GROWING.

(Newark Evening News.)

One experiment that it has been impossible to carry through successfully is the attempt that has been made during the past ten years to transform the barren sand hills of western Kansas into a forest area. Nearly 263,000 acres of the sandhill country was set aside in 1905 and called the Kansas national forest. Since that time some of the most proficient of the Government's forest planting experts have painstakingly attempted to cover the area with young trees. While it was found possible to coax jack pines to grow on the reservation, the usual methods had to be so modified, because of peculiar soil and climatic conditions, that the cost of afforestation was seen to be prohibitive. On recommendation, therefore, of the secretary of agriculture and the secretary of the interior, the president has signed a proclamation abolishing the Kansas national forest.

Much of the land in the reservation has been filed on since the proclamation was issued, under the 320-acre homestead act, and will be put to use for dry farming. Over 3,000 acres are being reserved for use as a proposed game preserve for the almost extinct antelope, and some of the area will undoubtedly be of little or no value for any purpose.

That afforestation in barren sandhill country can be carried on successfully and profitably is proved by the results achieved in western Nebraska only a few hundred miles north of the abolished Kansas forest. There jack pines have been established at reasonable cost and are growing lustily. The failure in Kansas was practically a voluntary failure for economic reasons. If the time should come when it is worth a great deal more than it is now to have forests covering the Kansas handhills Uncle Sam has the satisfaction of knowing that he can turn the trick.

WORLD'S LEAD PENCILS.

The world's production of lead pencils probably amounts to nearly 2,000,000,000 a year, half of which are made from American-grown cedar. The United States makes about 750,000,000 a year, or more than eight pencils for each of its inhabitants. Owing to the growing scarcity of red cedar and the fact that many other trees now little used appear to be more or less valuable substitutes for that wood in pencil-making, the forest service has carried out a series of tests which show that, next to the two species heretofore used for the purpose, the best trees for pencils are, in order of merit, Rocky Mountain red cedar, big tree (*Sequoia*), Port Orford cedar, redwood and alligator juniper.

Anglo Newfoundland Development Company, Limited

Directors Report for 1915

(Special to the Pulp and Paper Magazine)

The profits of the company for the year ended August 31st, 1915, after making provision for depreciation of buildings, plant, machinery, logging gear, and for depreciation of houses, furnishings and all other equipment amounted to £51,350 0s. 8d.

In accordance with the terms of the Trust Deed, the sum of £10,000 together with the amount of interest on stock already cancelled has been paid to the trustees for the debenture holders, and by them expended in the purchase of debenture stock for cancellation.

The conversion of the deferred ordinary shares into preferred ordinary shares and of the whole capital into ordinary shares authorised by special resolutions which was confirmed in November, 1914, has been duly carried into effect, and the shares are therefore now all of one denomination.

After payment of debenture interest due, and providing for the amount accrued to August 31st, and for the sinking fund, there remains to be carried to the Balance sheet a balance of £16,474 13s. 6d. to which has to be added the balance standing at the credit of profit and loss prior to August 31st, 1915, making a total balance of £25,786 8s. 9d., carried forward on profit and loss account.

During the past year the business of the company owing to the war has necessarily been carried on under the greatest difficulties and the outlook is that these difficulties are likely to increase rather than diminish, in the current year. All mill supplies, such as coal, aniline dyes and other materials essential to the manufacture of pulp and paper have risen in price, and particularly, the company has had to face a very heavy increase in freight and insurance charges and increased cost of landing storing, and delivery of the paper to consumers. In order to minimise as much as possible the severe rise in the freight rate, your directors were compelled in the early part of the year to buy two steamships.

The output of the mill during the past year has again been most satisfactory, showing a substantial increase over the previous year's total, and the quality of the paper and pulp produced by the company has been maintained at the high standard previously achieved.

The following table shows the scale of operations at the pulp and paper mills at Grand Falls for the past year, and a comparative estimate with that of the previous year.

	1913-14		1914-15
Pulpwood cut ..	160,000	Cords as against..	116,000
Average number men employed	1,610	Men as against....	1,640
Newspaper made .	55,300	Tons as against....	60,500
Groundwood pulp	52,800	Tons as against....	52,900
Sulphite wood pulp	14,600	Tons as against....	16,800

The greatest increase is in the amount of Newspaper made. This increased production amounts to 9½ per cent.

The average pay roll of the Anglo Development Co. for every month of the past year was \$75,000. The

chief improvement to the plant during the past year has been the installation of new barkers that are expected to give a saving of 15 per cent of the wood used.

An additional blow pit has been constructed which will give purer sulphite than heretofore, and thereby will give longer life to the wires of the paper machines which formerly were rendered useless comparatively quickly by the corroding of the acid in the stock.

At Red Indian Lake a new dam has been built to improve the storage of water at a cost of twenty-five thousand dollars; concrete piers with sluice gates between them have been installed and it is confidently expected that these additional improvements will result in increased economy and larger output.

Newfoundland Notes

Lumbering men in every section of the country anticipating a large demand for pit props next season are engaging in the work on an enormous scale. Practically every available man throughout the country being engaged. To eliminate the middleman two or three large English pit prop dealers have secured timber limits and are themselves placing men in the woods.

Most of the props, however are being cut for local lumbering men who have secured contracts from English collieries, and who themselves are placing in the bush gangs of men numbering from twenty to one hundred, according to the size of the contract.

There are being cut thousands of cords of pit props exclusive of this, by men who unable to hire out for a winter's work are engaging at home instead, and will next spring sell to English buyers.

Though it is impossible to give an estimate of the prospective winter's cut just now, it would not be exaggerating to place it as possibly half a million cords. Dealers are now offering \$4 a cord to the cutters for the props, after being barked, and piled for shipping.

The death has occurred of Thos. L. Wilson promoter of Newfoundland Products Corporation. At the time of his death Mr. Wilson was in New York in connection with the financing of the Products Corporation and had met with large success. Amongst other industries to be developed by the Corporation was the timber resources in Newfoundland. Most of the vast tracts of timber lands owned by the Reid Newfoundland Co. have already been acquired by the Corporation and in return for certain large concessions in Newfoundland, notably water powers the Corporation has agreed to erect large saw mills which will have a yearly consumption of 100,000 cords of spruce pulpwood, from which will be produced 36,000 tons of sulphite pulp at a value of \$1,825,000.

The cost of the saw mills construction was estimated at \$211,800. The cost of sulphite pulp mills, electrolytic bleaching plants and wood preparations was estimated at \$1,568,300. To date about one million dollars, this year, have been spent in connection with the proposed industry in surveying lands, etc., to be used by the corporation. At the present time there is a large staff of engineers still engaged over the territory of the Corporation, preparatory to the establishment of the industry. The death of Mr. Wilson will delay somewhat the original plans for the erection of the plant, but the Reid Newfoundland Company who are largely interested in the Corporation does not think that Mr. Wilsons

demise will mean anything like an indefinite postponement of the work.

The weather so far this season for men in the lumbering camps has been good, very little snow however has fallen, and the large cut will necessitate snow to be hauled before any real returns will have been made for the seasons work so far. As the amount of snow in the lumber woods last year was exceptionally small large piles of timber had be left unhauled. If favorable weather for hauling is soon secured the balance of last years cut together with this years will make it is expected a record output.

FORGERS REPRODUCED WATERMARK.

On a charge of forging over a thousand £1 treasury notes, Henry Ralph Lyons was sentenced to eight years penal servitude, and Alfred E. Edwards and Harry Williams to ten years. It was stated at the trial that the prisoners had succeeded with a skill which was most alarming in imitating the watermark in the notes. It could only be done by means of an etched zinc plate, which had first of all to be produced by photography from a genuine note, the printing having in some way been obliterated in the photograph. The watermark was produced by heavy pressure in a copperplate press.—London Correspondence Paper Mill.

STORIES FOR SCHOOL CHILDREN.

Talks on Forestry for children are being sent out by the Association to school teachers under various attractive headings. The matter is all in story or semi-story form and in many cases the manuscripts furnished to teachers will be accompanied by sets of photographs which can be passed about a class room.

In nearly all Canadian schools a portion of Friday afternoon is devoted to miscellaneous reading and it would be acceptable to teachers and pupils alike. In this way, the inculcation of the rudiments of Forestry has been shown that simple talks on forest subjects may be assisted from a new angle.

FIRE WARNINGS ON GAME TAGS.

As a result of representations made by the Canadian Forestry Association, several of the provincial governments have decided to place upon the backs of licenses and other literature issued to sportsmen, a form of fire warning. The Chief Game Commissioner of Nova Scotia and the Deputy Minister of Lands and Mines for New Brunswick, have already undertaken to have the next issue of game tags contain a warning, and it is confidently expected that most of the other provinces will take similar action in the near future. The response to the Association's suggestion was most hearty.

PULP AND PAPER NOTES.

The Canadian Society of Forest Engineers has been incorporated under the laws of the Province of Ontario. This society has had a healthy and steady growth and is increasing in importance and influence. It now numbers forty-eight active, thirty associate, two honorary and two student members.

ABITIBI PAPER ANNUAL

Proxies are out for the annual meeting of the Abitibi Power & Paper Co., Ltd., in the names of Alex. Smith, of Chicago, and F. H. Anson and Shirley Ogilvie, of Montreal. The meeting will be held on February 14th, at the head office here.

PAPER EXPORTS.

Exports of paper through the port of New York during the week ending January 5 consisted of shipments having a total valuation of \$249,676, which were forwarded to thirty-three different countries. Some of the largest shipments were as follows: To Argentina, \$133,596; to Cuba, \$38,170; to England, \$14,673; to Mexico, \$9,567; to British South Africa, \$8,187, and to Colombia, \$7,748.—The Paper Mill.

MAKING WOODENS HOES

A factory has just been completed and is in operation at Everett, Wash, manufacturing red cedar shoes from timber logged on the upper tributaries of the Snohomish River. The wooden shoes are now being used, quite extensively by workmen in breweries, tanneries and firemen and coal stokers on ocean liners. Where the feet must come in close contact with hot grates, doors near strong acids, the cedar wood has been found to be the best non-conductor known.

CHEMICAL KILLING OF WEEDS.

Killing weeds with a specially prepared chemical solution has been found practicable by railroads. Not only does this solution kill the weeds, but it is claimed that it benefits the entire structure, and insures clean ballast. The apparatus consists of one or more tank cars fitted with spraying apparatus, for handling the chemical. The equipment is designed to carry a sprinkling load capable of spraying from eight to twenty miles. The speed of the operation is from fifteen to twenty miles an hour.

TREES FOR PRAIRIE FARMERS.

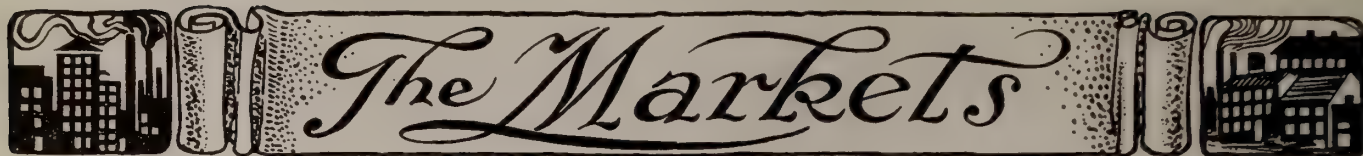
The Dominion Government's Forest Nursery at Indian Head is now distributing evergreens such as spruce and pine for farm planting under special conditions. The distribution is confined entirely to farm planting and no stock of any kind is supplied for planting on town or city lots. Applicants must be bona fide owners of farms.

MEETING POSTPONED.

The usual Autumn Meeting of the British Paper-Makers' Association was not held last fall.

PAPERMAKING MATERIALS.

British imports of papermaking material in August show an increase of £506,107 over the figure for August of last year, but a decrease of £62,834 as compared with the return from the previous month. Decreases are shown by each item in the return, the largest of which is in the case of esparto. The decreases are as follows: Chemical wood pulp, 1,344 tons, £15,198; mechanical wood pulp, 914 tons, £5,426; esparto, 7,421 tons, £39,886; rags, 270 tons, £1,019; and other materials, 93 tons, £1,305. Turning to the eight months' figures and comparing them with the corresponding period of last year, it is found that there is an increase of £486,581. The increases are:—Chemical wood pulp, 57,887 tons, £531,344; mechanical wood pulp, 69,089 tons, £193,510; esparto, 11,941 tons, £58,281; rags, 958 tons, £13,432; other materials, 183 tons, £2,061.



CANADIAN MARKETS

With the ushering in of 1916 in the pulp and paper line, there is a general feeling of optimism in the trade. Every mill is looking forward to a more prosperous and settled year, although reports, which will soon be presented at the annual meetings of the various companies, will show that the past twelve months have revealed an increase over 1914. There are, of course, some disturbing factors, and just how serious these may become only time will tell. One is the color situation, and the other is the ascending price of sulphite, both bleached and unbleached, and of sulphate as well. Then the fact that no rags are received from the European market is another drawback. The price of all colored papers has again gone up, and one mill specializing on poster paper has, on the average, raised its figure about a cent per pound. It is said that the price for all colored stock will continue to advance until some substitutes are made outside of Germany.

News print conditions continue firm, and some mills are talking of installing more machines to meet the situation, but whether any definite action will be taken remains to be seen. Prices remain steady.

Book and writing mills are well employed, and there are heavy orders being placed at the present time. Higher prices will soon be asked for the better grades owing to the scarcity of rags, and the lower grades are almost sure to go up, due to the rapidly ascending figure for sulphite, which is ten to twelve dollars per ton above what it was a few months ago.

Some mills have already revised their prices on special lines, such as Bristols, which are up $\frac{3}{4}$ c, and cover papers $\frac{1}{2}$ c. In the wrapping line there is going to be another advance, although prices were raised about six weeks ago. This will mean higher figure paper bags and kindred lines. The kraft situation, owing to the splendid market abroad, is getting stronger all the time. In tissue papers, mills have withdrawn quotations, and prices are in a topsy-turvy state, being changed almost daily. Mills are flooded with orders, and cannot guarantee deliveries for several weeks. Boards are also holding their firmness with prices steadily on the up grade.

Several paper box manufacturers are now quoting net terms instead of the usual discount. An evidence of the upward tendency in all kinds of papers is that a leading wholesale firm in Toronto, which have been giving other wholesale firms, who may require certain supplies from time to time, ten per cent discount, have notified the trade that they have withdrawn this figure, owing to the scarcity of dyes, and to conserve the stock for their immediate customers. On all books papers and special domestic lines made in Canada, special prices will be quoted, but the ten per cent discount has been withdrawn on these as well, as on all lines of colored and domestic book papers.

In sulphite pulp the situation is becoming stronger and more alarming all the time, and for easy bleaching for book purposes as high as fifty-two dollars is now obtained at the mills. Prices are due to jump even higher, and buying in large lots is not encourag-

ed. Just what the future will reveal no one can predict. Some years ago as high as fifty-six dollars was obtained in Wisconsin by a Canadian firm for easy bleaching sulphite, and that top notch figure has about been reached to-day, if freight rates are taken into consideration. The question now arises, will easy bleaching book pulp touch \$60 by the spring. Bleached sulphite is also away up, owing to the excessive cost of bleaching powder, sulphur, etc.

In the rag and paper stock market things are going up, particularly on manila envelope cuttings, and print manilas. The demand is strong for all grades of paper stock. New cottons are firm, but roofing stock quotations have declined of late.

Quotations f.o.b. Toronto, are:—

Paper.

News (rolls) \$1.95 to \$2.05 at mill, in carload lots.
 News (sheets), \$2.15 to \$2.30 at mill, in carload lots.
 Book papers (ton lots), 4.25c. up.
 Book papers (carload), No. 3, 4.00c to 4.25c.
 Book papers (carload), No. 2, 4.50c.
 Book papers (ton lots), No. 2, 4.75c to 5.50c.
 Book papers (carload) No. 1, 5.00c to 5.50c.
 Book papers (ton lots), No. 1, 5.50c up.
 Sulphite bonds, $6\frac{1}{2}$ to 8c.
 Writings, $4\frac{1}{2}$ c up.
 Grey Browns, \$2.35 to \$2.75.
 Fibre, \$3.35 to \$4.00.
 Manila, B., \$2.85 to \$3.50.
 Manila, No. 2, \$3.25 to \$3.75.
 Manila No. 1, \$3.35 to \$4.00.
 Unglazed Kraft, \$4.25 to \$5.25.
 Glazed Kraft, \$4.75 to \$5.50.

Pulp.

Ground wood pulp (at mill), \$16 to \$17.
 Ground wood \$19 to \$23, delivered.
 Sulphite (unbleached), \$50 to \$53, del. in Canada.
 Sulphite ((unbleached), \$50 to \$53, delivered in U.S.
 Sulphite (bleached) delivered, \$68 up.
 Sulphate, delivered, \$48 to \$50.

Paper Stock.

White envelope cuttings, \$2.10.
 No 1 soft white shavings, \$1.90.
 White blanks, \$1.00.
 No. 1 book stock, 95c.
 No. 2 book stock, 65c.
 Ordinary ledger stock, \$1.25.
 Heavy ledger stock, \$1.65.
 No. 1 Manila envelope cuttings, \$1.20.
 No. 1 print Manilas, 70c.
 Folded News, 45c.
 Over issues, 50c.
 No. 1 cleaned mixed paper, $37\frac{1}{2}$ c.
 Old white cotton, \$2.40.
 No. 1 white shirt cuttings, \$5.25.
 Black overall cuttings, \$1.60.
 Thirds, blues, \$1.60.
 Black linings, \$1.60.
 New light flannelettes, \$3.75.
 Ordinary satinets, \$1.60.

Flock, \$1.70.
 Tailor rags, \$1.60.
 Blue overall cuttings, \$3.75.
 Manila rope, \$2.65.
 No. 1 burlap bagging, \$1.50.

Quotations f.o.b. Montreal remain unchanged, and are as follows:

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$45 to \$50 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders; \$50 to \$60 per ton for small orders.
 No. 1 Book, 5¼c to 5¾c per lb.
 No. 2 Book, S.C., \$4.50 to \$4.75 in large quantities; \$4.75 to \$5.50 in small quantities.
 No. 3 Book, M.F., \$4.00 to \$4.25 in large quantities; \$4.40 to \$4.50 in small quantities.
 Writings, 5c to 7½c.
 Sulphite Bond, 6½c to 8½c.
 Writing Manila, 5c.
 Cover Papers 6½ to 10c. per lb.
 Colored Posters, 4½c to 5½s per lb.

Wrappings.

Grey Brown, per 100 lbs., car lots, \$2.25 net; 5 tons \$2.45; 2 tons, \$2.55; 1 ton, \$2.65; less, \$2.75.
 B. Manila, car lots, \$2.85, less 5 per cent; 5 tons, \$2.95; 2 tons, \$3.05; 1 ton, \$3.15; less \$3.25.
 No. 2 Manila, car lots, \$3; 5 tons, \$3.20; 2 tons, \$3.30; 1 ton, \$3.40; less, \$3.50.
 No. 1 Manila, car lots, \$3.35; 5 tons, \$3.45; 2 tons, \$3.55; 1 ton, \$3.65; less \$3.75.
 Kraft, \$3.75 to \$5.00.
 Fibre, car lots, \$3.35; 5 tons, \$3.45; 2 tons, \$3.55; 1 ton, \$3.65; less, \$3.75.
 Fibre, \$2.75 to \$3.50.
 Manila, B., \$2.50 to \$3.25.

Pulp.

Sulphite easy bleaching, \$43 to \$45 per ton.
 News quality, \$39 to \$40 per ton.
 Bleached sulphite, \$54 to \$59 per ton.
 Ground wood, \$20 to \$23, delivered in United States.
 Kraft Pulp, \$39 to \$40.

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine.)

New York, Jan. 11, 1916.

The Status of the ground wood pulp market seems to be rapidly improving. Grinders report that they find consumers showing more interest from time to time and feel that the future is rather encouraging. That they are justified in their hopes seems plausible for the low water conditions continue throughout New York State. The fact is that the news mills have been unable to operate their grinding machines for some time. As they are running their paper machines at full capacity, consuming large quantities of ground wood, their reserve supplies are beginning to show signs of a depletion and the question of future supplies is growing in moment. The demand for export is said to continue strong and is undoubtedly acting to strengthen the market. Of course, owing to the lack of shipping facilities, it is impossible to take care of the export trade to the fullest extent, but the inquiry tends to aid the market.

Chemical pulps are more acute than they have been at any stage since the scarcity was first noticed a few months ago. While the imports which were recorded for the past few weeks were considered "heavy" they

were far from normal for this time of the year. Shipments from the Baltic coast before the close of navigation are said to have cleared the docks and warehouses of that section, but the stock was barely enough to take care of the contracts. Usually considerable stock is shipped to this country on consignment at the closing of navigation, but it has not been possible to make any such shipments this year. The fact is that the demand for chemical pulp from the various European nations is so great that the Scandinavians have no need to consign pulp to our ports. Prices being offered abroad are higher than those quoted here, so it is only logical that when pulp is offered for sale, it seldom gets an opportunity to meet the call from the domestic consumer. Stock which has been coming over here has been entirely on contract and for immediate consumption. Domestic docks are pretty well clear of chemical pulp. American paper makers are looking to Canada for their future supplies of pulp. At present, of course, the Canadian market appears to be sold far ahead and unable to take care of this emergency, but there is no doubt in the minds of dealers and consumers that Canada is the logical source of supply for pulp for the United States. Prices are almost prohibitive and continue to advance. On some grades of pulp, the market is merely nominal. A heavy demand is still being made for bleached sulphite, but there seems to be little hope for securing more than limited quantities and even then it is a difficult matter to obtain them. Bleached sulphite is practically exhausted. Those who have a lot are holding them for higher prices. At the present time several importers are asking 5 cents a pound for their bleached sulphite and it is a known fact that quotations as high as 5½ cents are being asked. Naturally, the action of bleaching powders is reflecting strongly on this market. Bleaching powder has now reached the stage where buyers are actually bidding against each other to secure small spot lots. Sales for this chemical have been recorded as high as 13½c. per pound. Some mills are trying to overcome this difficulty by installing electrolytic plants for the manufacture of bleaching powder, still it is not likely that the situation will be relieved to any great extent for some time to come. Some clairvoyants feel certain that the only event which can change the turn of things is the end of the war abroad and even then it is rather problematical. Easy bleaching has been in good demand on account of the situation in bleached sulphite. However, as easy bleaching is scarce, this demand is also active with inquiry, but there is comparatively little stock to be had. Prices on this grade have been advancing in proportion to the rest of the chemical pulps. Krafts seem to be due for a famine unless conditions change very soon. Practically no kraft pulp has coming in from abroad. A number of mills are known to be with contracts to cover them for the future. These concerns are in a very precarious predicament for they are finding it almost impossible to get in touch with any source of supply. Local dealers claim that their reports from Canada show that, for the present, there is little hope of getting much kraft from this direction owing to a heavy demand from England and to the fact that the English are paying very high prices for kraft. Already the market has reached the stage where the quotations are 3 to 3½c. in this vicinity. The outlook is that higher prices will prevail soon.

A little lull was noticed in rags after the holidays, but the market did not tend to weaken at any time. At present, inquiries are again plentiful and the indications are that the demand for stock will be greater than ever before. Owing to the strong decline in the imports of

foreign rags, there is somewhat of a shortage of stock. Higher grades of rags are very scarce, linens being almost unobtainable. A number of the linen writing mills are already looking for a substitute for this grade so as to be able to escape the fate which must meet those who are really dependent on their supplies of linens. Dealers in this vicinity expect to see another advance of at least 20 per cent in quotations before a few months. Even roofing rags are showing more life.

Bagging is holding its strong position. The demand for all grades is stronger than before and the shortage of stock is growing more pronounced all of the time. Gunny is being quoted at 2 to 2¼c.; bright bagging at 1.85c.; sound bagging at 1.65 to 1.70c.; mixed bagging at 1.50c. Manila rope is hard to obtain in large quantities. A heavy demand is reported. Quotations are firm at 3 to 3¼c., with a decided tendency to advance.

Waste papers are more active and are going at better prices than has been true in a long time. The acute situation in the market for chemical pulps has forced many of the paper makers to consider the use of waste papers instead. As a result, the market has been greatly stimulated and there is a demand for practically every grade but book and ledger stock, which, for some reason, continues more or less dormant. Hard shavings have advanced to 2.25 to 2.75c.; soft white shavings are selling at 2 to 2¼c.; colored shavings are being quoted at 50 to 75c.; flat stock is selling at 1 to 1.05. There has also been a better demand for white news, No. 1, which is going at 1.10c. Manilas have all advanced. Krafts are scarce at 1.50 to 1.60. Mixed papers are selling at 40 to 45c.

What is considered a most substantial sign of prosperity is the fact that there was little lull in the paper market during the holiday weeks. It is almost invariable that business shows the effects of the Yuletide season right after the holidays and a little before, but such effects were barely noticeable this year. The mill reports from all over the country show that the paper plants are all running at full capacity, trying almost vainly to catch up with their orders. Many mills have been compelled to refuse business unless the date of delivery could be made indefinite. Prices are steadily going up. Paper makers are beginning to find out that the raw material situation is really serious and that it may continue for a considerable period to come. As a result, the quotations on paper are going up, not in proportion, as yet, but that they will do so later is undoubted. On tissue paper the market seems destined for a very high mark. One mill is not taking orders on No. 1 white for less than 50c. Some mills have withdrawn their quotations and are quoting only on immediate business. News print is very active and is tending a little higher. The fact is that there is an actual shortage of news print at the present time and a few mills have been compelled to go "begging" in order to fill their contracts. Manilas are very active with prices likely to go higher. Krafts are scarce and hard to obtain. Conditions will surely become more acute in this market. Fibres are going well at higher figures. Boards are fairly active and advancing.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$16 to \$17, delivered.
Ground Wood, No. 2, \$14.50 to \$15.50, delivered.
Unbleached Sulphite, dom., 2.30c to 2.85c, delivered.
Easy Bleaching, impt., 2.65c to 3.10c, ex-dock, N.Y.
Unbleached Sulphite, impt., 2.25c to 2.60c, delivered.

Bleached Sulphite, domestic, 2.95 to 3.15c, delivered.
Bleached Sulphite, impt., 3.75c to 4.50c, ex-dock, N.Y.
Unbleached Sulphite, impt., 2.15 to 2.50c, ex-dock, New York.

Bleached Sulphate, impt., 2.80c to 2.90c, ex-dock, N.Y.
Kraft Pulp, 2.40c to 2.70c.

Paper.

News, Rolls, transient business, \$2.10 to \$2.15, f.o.b.
News, Sheets, \$2.20 to \$2.35, f.o.b.
News, Rolls, contract renewals, \$2.00 to \$2.10, f.o.b.
News, side runs, \$2.00 to \$2.15, f.o.b.
Book papers, car lots, S. & S.C., \$44.00 to \$44.50, f.o.b.
Writing paper, extra superfine, 13½c to 17c, del. east of Miss. River.
Writing paper, superfine, 11c to 13c, del. east Miss. R.
Writing paper, No. 1, fine, 9c, del. east Miss. River.
Writing paper, No. 2, fine, 8c, del. east Miss. River.
Writing paper, engine sized, 5c to 8c, east Miss. R.
Bond paper, 5c to 24c, delivered east of Miss. R.
Ledger paper, 5c to 25c, delivered east of Miss. R.
Linen paper, 8c to 18c, delivered east of Miss. River.
Manila jute, 4¾c to 5c, delivered.
Manila, wood, 2.50 to 3.35c, delivered.
Kraft, No. 1, (dom.) 3.75 to 3.85c, f.o.b. New York
Kraft, No. 2, (dom.) 3.45 to 3.60c, f.o.b. New York.
Kraft, imported, 3.95c to 4c, ex dock, New York.
Boxboards, news, \$29.00 per ton, delivered.
Wood pulp board, \$40 to \$42.50 per ton, delivered.
Boxboards, straw, \$27.00 per ton, delivered.
Boxboards, chip, \$29.00 per ton, delivered.
Tissue, fourdrinier, 50c. f.o.b. New York.
Tissue, white, cylinder, 42½ to 47½c, f.o.b., New York

STATIONERS AND THE WAR.

That stationery is one of the many trades to benefit by the war is very evident from remarks by prominent stationers in the Wall Street section. The great boom in the financial district has so increased demand that despite the fact that stationers are crowding in all the over-time possible, they are still uncertain about deliveries and their books show orders for months ahead. The situation has become so acute that several large firms, in order to catch up, have been compelled to refuse to take orders until after the first of the year.

"Without another order," said one prominent stationer, 90 per cent of whose business comes from Wall Street sources, "I can keep running comfortably for another six months to a year. Some of my largest customers are ordering six months ahead of requirements on account of the uncertainty of deliveries. The war has certainly done our business a lot of good."
—The Wall Street Journal.

BATHURST LUMBER COMPANY OPERATING.

The board mill of the Bathurst Lumber Co. started operation this week on folding sulphite boards. Their brown pulp mill will not be in operation for some time on account of a slight fire in the caustic plant, which will make it impossible to run container board made by their special process until this caustic plant is ready.

The bleach plant of the sulphite mill will be in operation early next month.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Compressors

Blethen, Hugh R., New York
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Hoists

Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.

Crane

Smart-Woods Ltd., Montreal, Que.

Crane

Bezner, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Waterous Engine Works Co. Ltd., Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M. Co., Inc., New York, N.Y.

Crane

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Tippet Arthur P. & Co., Montreal, Can.

Crane

Can. Fairbanks-Morse Co., Ltd., Montreal, Canada
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Can.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones and Glassco, St. Nicholas Building, Montreal
Reddaway, F. & Co., Montreal, Can.

Crane

Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Can.
Winn & Holland, Montreal, Can.

Crane

Sherbrooke Mach. Co., Sherbrooke, Que.

Crane

Canadian Allis-Chalmers, Ltd., Toronto
Jenckes Machine Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Crane

Capital Wire Cloth, Fourdrinier Wires
Capital Wire Cloth and Mfg., Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier Street, Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Crane

The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Crane

Northern Crane Works, Walkerville, Ont.

Crane

Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Crane

Blethen, Hugh R., New York, N.Y.

Crane

The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Jones and Glassco, St. Nicholas Building, Montreal

Crane

Jones and Glassco, St. Nicholas Building, Montreal

Crane

Brunner, Mond & Co., Montreal, Can.

Crane

Klipstein, A. & Co., Montreal, Can.

Crane

Hooker Electrochemical Co., New York, N.Y.

Crane

Paper Makers' Chemical Co., Easton, Pa.

Crane

Tippet, A. P. & Co., Montreal, Can.

Crane

Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Crane

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Crane

Carthage Machine Co., Carthage, N.Y.

Crane

The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Bezner, Albert Machine Works, 299 Broadway, New York City

Crane

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Crane

Carthage Machine Co., Carthage, N.Y.

Crane

Winn & Holland, Montreal, Can.

Crane

Blethen Hugh R., New York, N.Y.

Hamilton, Wm. Co., Ltd. Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Crane

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Crane

Caldwell, H. W. & Son Co., Chicago, Ill.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jeffrey Mfg. Co., Montreal, Can.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Process Engineers, Ltd., Montreal, Can.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Crane

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Crane

Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Crane

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.

Crane

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Can.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Johnson & Sons, C. H., St. Henry, Montreal, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Crane

Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Process Engineers, Ltd., Montreal, Can.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Crane

Pusey & Jones Company, Wilmington, Del.

Crane

Schaeffer & Budenberg, Brooklyn, N.Y.

Crane

Snell, Samuel, Co., Holyoke, Mass.

Crane

Bertram Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.

Crane

Forman, John, 248 Craig Street W., Montreal

Crane

The Waterous Engine Works Co., Limited, Brantford, Ont.

Crane

Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Scott, Ernest & Co., Fall River, Mass.

Crane

The Sherbrooke Machinery Co., Sherbrooke, Que.

Crane

Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Ltd., London, Eng.
Process Engineers Ltd., Montreal, Can.
Pusey & Jones Company, Wilmington, Del.

Crane

Parsons Trading Co., New York, N.Y.

Crane

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Mont.

MILL SUPPLIES---Continued

- W. H. Caldwell, Ltd., St. Hyacinthe, Can.**
Porritt, Joseph & Sons, -Manchester, Eng.
Spencer, J. M. & Sons, Bury, England..
Tippett Arthur P & Co., Montreal, Can.
- Filters**
 Chambers Ltd., 152 Bay Street, Toronto.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.
 Pusey & Jones Company, Wilmington, Del.
- Friction Hoists**
 Glens Falls Mach. Works, Glens Falls, N.Y.
 Hamilton, Wm., Co., Peterboro, Can.
 Jenckes Machin. Co., Sherbrooke, Que.
 Pusey & Jones Company, Wilmington, Del.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co. Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
- Gauges**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Generators and Transformers**
 Chambers Ltd., 152 Bay Street, Toronto.
 Siemens Co., of Canada, Ltd., Montreal, Can.
- Grinders**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Hand Power.**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Helicoid Conveyor**
 H. W. Caldwell & Son Co., Chicago.
- Hoists.**
 Blethen, Hugh R., New York, N.Y.
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
 Northern Crane Works Limited, Walkerville, Ont.
- Hoists—Chain Electric and Pneumatic**
 Blethen, Hugh R., New York, N.Y.
- Iron Pulleys**
 H. W. Caldwell & Son Co., Chicago.
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Jordan Engines**
 Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.
- Knives**
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Crookes, Roberts & Co., Sheffield, Eng.
 Hay, Peter, Knife Co., Galt, Can.
 Tippet, A. P. & Co., Montreal, Can.
- Kollergangs**
 Bertrams Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Pusey & Jones Company, Wilmington, Del.
- Laying Machines**
 Chambers, Ltd., Toronto.
 Collis & Sons, J., London, Eng.
- Paper Stock, Etc.**
 Hough, R., London, England.
 Pullan, E., 490 Adelaide Street, W., Toronto, Can.
- Paper and Pulp Machinery**
 Beloit Iron Works, Beloit, Wis.
 Bentley & Jackson, Bury, England.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertram's, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal.
 Carthage Machine Co., Carthage, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto, Can.
 Dillon Machine Co., Lawrence, Mass.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Mach. Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Green Bay Barker Co., Green Bay, Wis.
 Hamilton, Wm., Co., Peterboro, Can.
 Harmon Machine Co., Watertown, N.Y.
 Jenckes Machine Co., Sherbrooke, Que.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Can.
 Marx, I. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Pusey-Jones Co., Wilmington, Del.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
 Smith, S. Morgan, Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appteton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, Eng.
 Waterous Engine Works Co., Ltd., Brantford, Can.
 Westbye, P. P., Peterboro, Can.
- Paper Machine Tachometers**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Paper Tester**
 Chambers Ltd., 152 Bay Street, Toronto.
 Marshall, T. J. & Co., Stoke Newington, London, England.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pneumatic Thickeners**
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
- Presses**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Can.
 Chambers Ltd., 152 Bay Street, Toronto.
- Pneumatic Chain Blocks**
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Press Rolls**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 Process Engineers Limited, Montreal, Can.
 Pusey & Jones Company, Wilmington, Del.
- Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulp Stones**
 Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.
- Rumps**
 Bertrams Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Alhs-Chalmers, Ltd., Toronto, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto.
 Dillon Machine Co., Lawrence, Mass.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Hamilton, Wm., Co., Peterboro, Can.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Pusey & Jones Company, Wilmington, Del.
 Smart Turner Machine Co., Hamilton, Can.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Recording Gauges**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Recording Thermometers**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Refiners**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Pusey & Jones Company, Wilmington, Del.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Ma.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co. Ltd., Brantford, Can.
- Rope, Cotton and Manila**
 Jones and Glassco, St. Nicholas Building, Montreal
- Rope Wheels**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
 William Hamilton Company, Ltd., Peterborough, Ont.
- RoSin Size**
 Fox, Stockell & Co., London, Eng.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- RoSin Size Boilers and Dissolvers**
 Process Engineers, Ltd. Montreal, Can.
- Rotary Sulphur Furnaces**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Can.
 Stebbins Engineering and Manufacturing Co., Watertown, N. Y.
- Runways—Hand operated**
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Save-Alls**
 Pusey & Jones Company, Wilmington, Del.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Can.
- Screen Plates**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Screens**
 Bertrams Ltd., Edinburgh, Scotland.
 Bezner, Albert, 299 Broadway, New York City
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Glens Falls Mach. Wks., Glens Falls, N.Y.
 Harmon Machine Co., Watertown, N.Y.
 Jenckes Machine Co., Sherbrooke, Que.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
 Tippet Arthur P. & Co., Montreal, Can.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co. Ltd., Brantford, Can.
 Westbye, P. P., Peterboro, Can.
- Slitters and Re-Winders**
 Bertrams Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto.
 Moore & White Co., Philadelphia, Pa.
 Pusey & Jones Company, Wilmington, Del.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
- Sprockets**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Split Pulleys—Wood and Steel**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Spiral Conveyor**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Straw Cutters**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
- Straw Dusters**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
- Strawboard Making Machines**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.

MILL SUPPLIES---Continued

- am Regulator**
Pickles, W. F., Buckland, Conn.
- el Barrels**
The Smart Turner Machine Co., Hamilton, Ont.
- el Drums**
The Smart Turner Machine Co., Hamilton, Ont.
- ff Chests**
The Watrous Engine Works Co., Limited Brantford, Ont.
- ction Couch**
Process Engineers Ltd., Montreal, Can.
- phite Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- phate Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- phur**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- phur Burners**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- chometers (Hand and Stationary)**
Schaeffer & Budenberg, Brooklyn, N.Y.
- nks**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- ermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- ransmission Machinery**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Limited, Toronto
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones & Glascoe, Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- ransmission Rope**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Travelling Cranes**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turher Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Trolleys**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turher Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Turbines**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc. New York, N.Y.
Voith, J. M. Wurttemberg Germany
William Hamilton Company, Ltd., Peterborough, Ont.
- Water Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
- Wire Cloth for Paper Machines**
Chambers, Ltd., Toronto.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Weathby, P. P., Peterboro, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste**
Hough, R., London, England.
- Wet Machines**
Bertrams Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co. Ltd., Brantford Ont.
- Wood Preparing Machinery**
Bezner, Albert, 299 Broadway, New York City

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Sound Wood Pulp

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R., Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- News Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co., (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.

Kraft

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Riordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp and Paper Mills Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

- Eddy, The E. B. Co., Ltd., Hull, P. Q.
- Lincoln Paper Mills Co., Ltd., Merriton, Ont.
- Ford, J. & Co., Port Neuf.
- Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board

- McArthur, Alex. & Co., Montreal.

letting

- Canada Paper Co., Montreal.

ono

- Canada Paper Co., Ltd., Montreal.
- Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho

- Canada Paper Co., Ltd., Montreal.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristle

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal & Toronto.

Building and Sheathing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co. Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials

Don Valley Paper Co., Ltd. Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
Macleod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co. Ltd., Canada Life Building, Montreal, Que.

Carpet Lining

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper

Lazier Paper Mills, Ltd., Belleville,
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope

Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes

Hinde and Dauch Paper Co. of Canada, Toronto

Flour Sacks

Eddy Co., The E. B. Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal.

Glazed

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.

Kraft

Brompton Pulp & Paper Co. Ltd., East Angus, Que.
Dominion Paper Co. Ltd., Montreal, Que.
Dryden Timber and Power Co. Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board

Walker, J. R. & Co., Montreal, Que.

News

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd. Grand Falls, New
foundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin Crabtree Mills, Quebec
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co. Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co. Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland and Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet

Eddy Co., The E. B. Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde and Dauch Paper Co. of Canada, Toronto

Wood Board

Beaver Co. Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp Paper Co. Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal Que

Wrapping

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
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Alphabetical List of Advertisers

See Classified List on page 51

Unpaged advertisements appear in every other issue

A

Abitibi Power & Paper Co.....	62
Albertson, D. J.....	64
Ambursen Hydraulic Construc- tion Co., Ltd.....	11
Ayers, Ltd.....	66

B

Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd....	10
Bertrams, Ltd.....	7
Black-Clawson Co.....	60
Boving Hydraulic & Engineering Co. Limited.....	6

C

Caldwell, H. W. & Son Co.....	18
Cameron Machine Co.....	63
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.	10
Canadian Westinghouse Company, Ltd.	63
Capital Wire Cloth Mfg. Co. Ltd.	63
Carthage Machine Co.....	61
Chambers, Ltd.....	7
Chicoutimi Pulp Co.....	68
China Clay Co.....	60
Christie George, Ltd.....	60
Churchill & Sim.....	13
Crookes, Roberts & Co.....	13
Crossley T. L.....	65

D

DeCew, J. A.....	65
Dean & Son.....	6
Dodge Manufacturing Co., Ltd....	2
Dominion Belting Co.....	63
Dominion Pulp Woods Limits...	54

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	61
Emerson Mfg. Co.....	65

F

Farrel Foundry & Machine Co.	11
J. Ford & Company.....	62

G

Glens Falls Machine Works....	
-------------------------------	--

H

Hamilton, Wm., Co., Ltd.....	14
Hardy, Geo. F.....	64
Harmon Machine Co.....	63
Hartig, Hugo.....	63
Hay Knife Co., Peter, Ltd.....	65
Hersey, Milton Co.....	63
Hooker Electrochemical Co.....	12
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg Co.....	59
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H....	18
Johnson Chas.....	4
Jones, E. D. & Sons. Co.....	17
Jones & Glassco.....	6

K

Klipstein, A. & Co., Ltd.....	61
-------------------------------	----

L

Lauderburn, D. E.....	64
Lawrence Machine Co.....	65
Laurentide Co., Ltd.....	13
Little, Arthur D., Inc.....	65
Lombard & Co.....	8

M

Marx, J & C.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15

N

National Paper Co.....	16
Northern Crane Works Ltd....	66
Norwood Engineering Co. of Can Ltd	66

O

Ontario Pulp Wood Limits....	67
Ottawa Car Mfg. Co., Ltd.....	59

P

Panzl Digester Lining Co.....	66
Paper Makers Chemical Co....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Prestons Digester Lining Co., Ltd.....	16
Process Engineers, Ltd.....	65
Provincial Paper Mills Co. Ltd....	9
Pullan, E.....	63
Pulp & Paper Trading Co.....	63

R

Rice, Barton & Fales Machine & Iron Co.....	2
Riordon Pulp & Paper Co., Ltd.	62
Rolland Paper Co. Ltd.....	62

S

Salomon & Co., Felix.....	63
Sandy Hill Iron & Brass Works	17
Schaeffer & Budenberg Mfg. Co	62
Schlick, Leo.....	64
Scott, Ernest & Co.....	60
Sherbrooke Machinery Co., Ltd...	5
Smart Turner Machine Co.....	68
Smith, S Morgan Co.....	68
Snell, Samuel Co.....	13
Spencer, J. H. & Sons.....	68
Stancliffe Estates Co., Ltd.....	64
Stebbins Engineering & Mfg. Co.	64

T

Taylor, J. A.....	60
Ticonderoga Machine Works....	6
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	60
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	63
Voith, J. M.....	12

W

Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co, Ltd...	4
Waterous Engine Works Co., Ltd	
Westbye, P. P.....	
Wilson-Paterson Co.....	
Winn & Holland.....	

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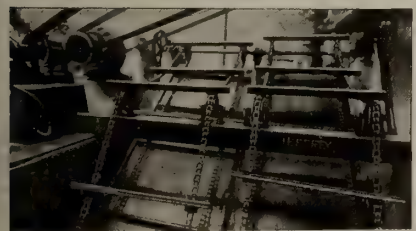
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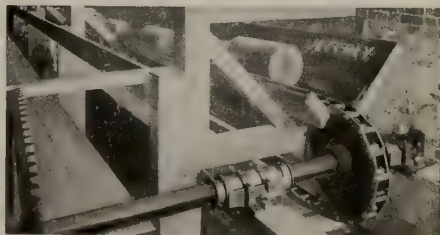
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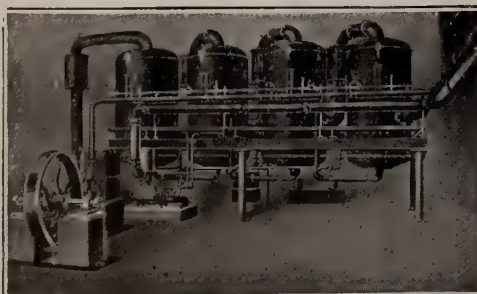
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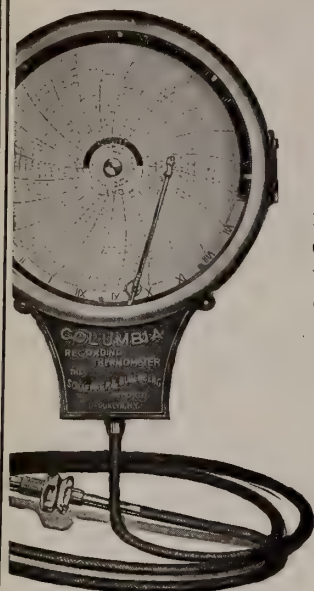
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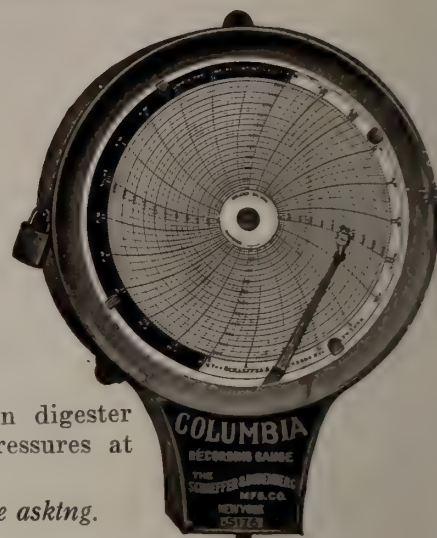
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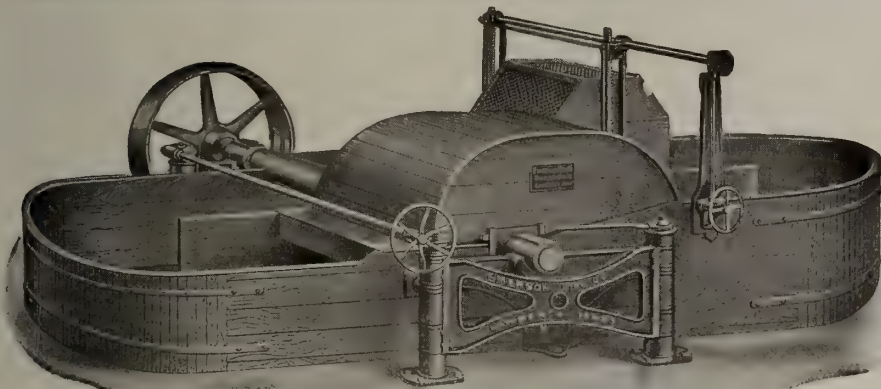
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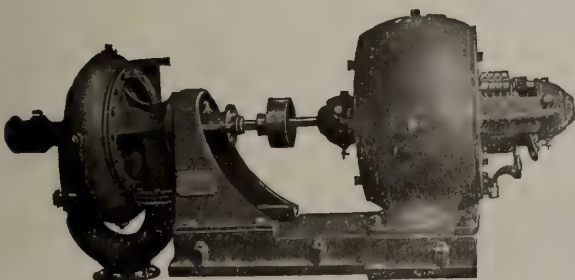
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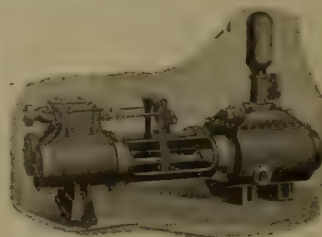


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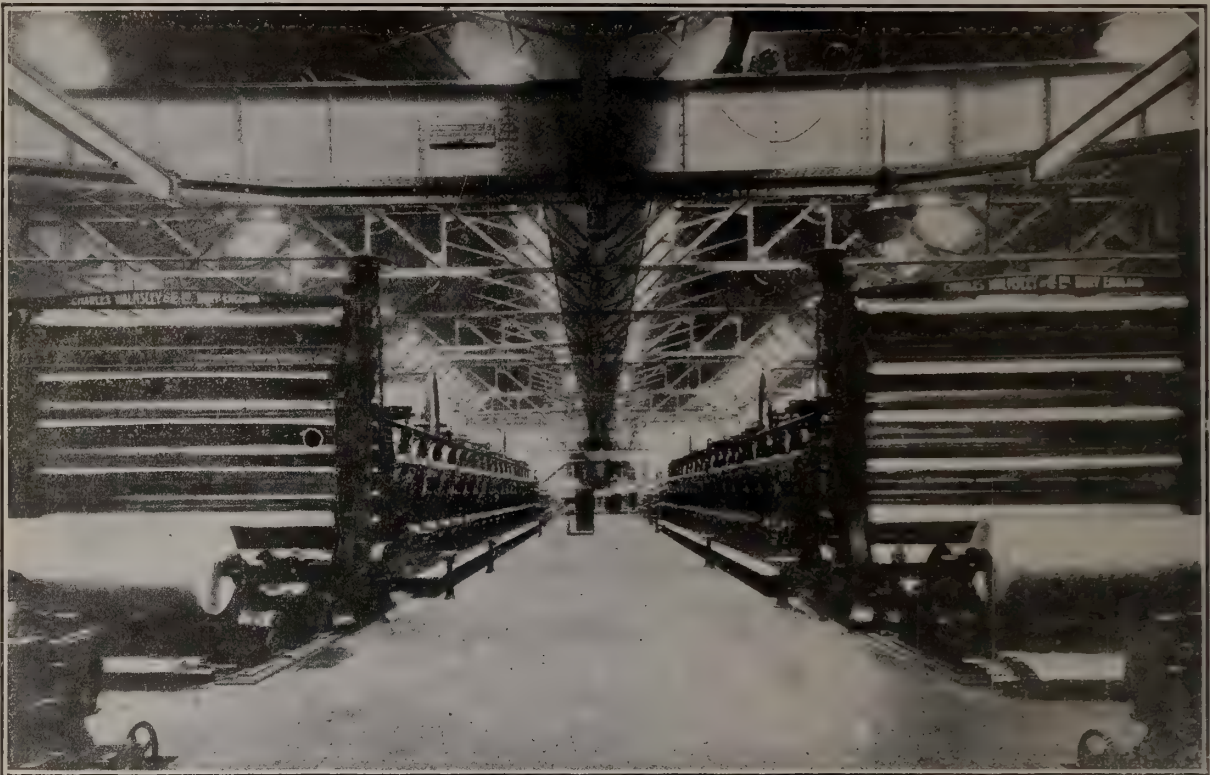
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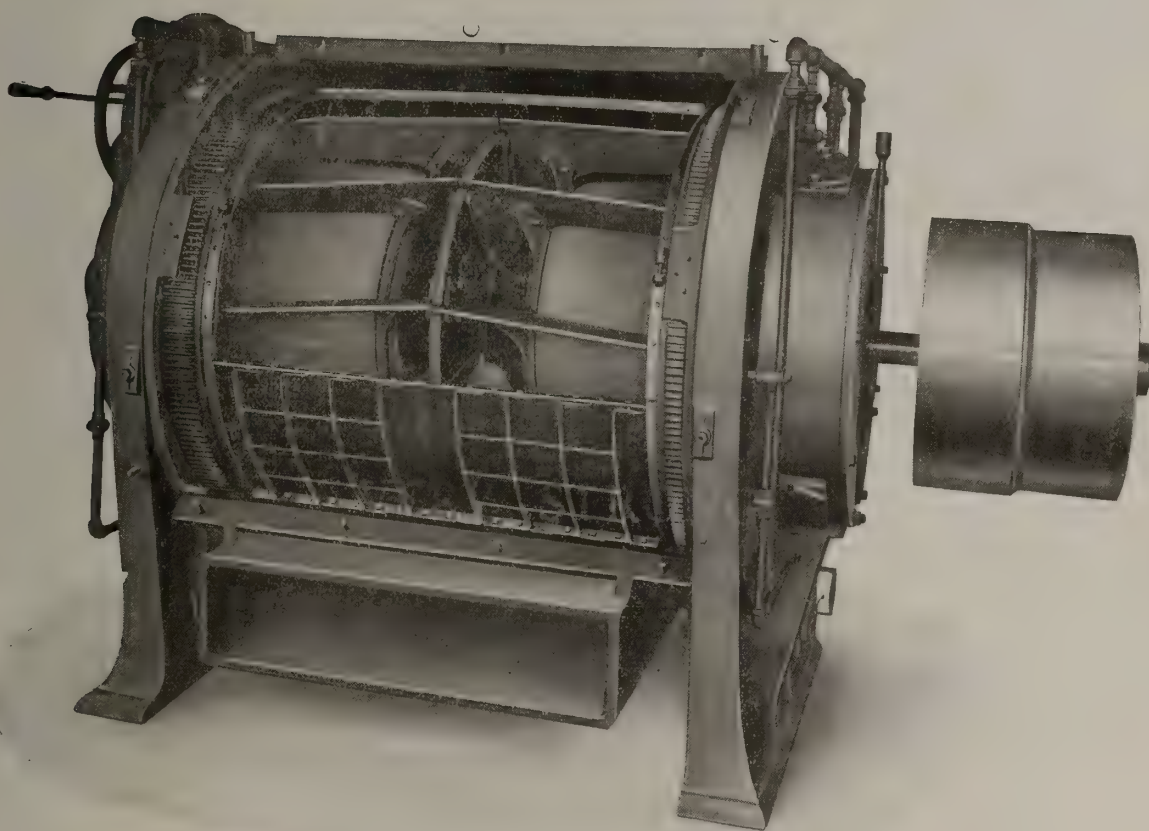
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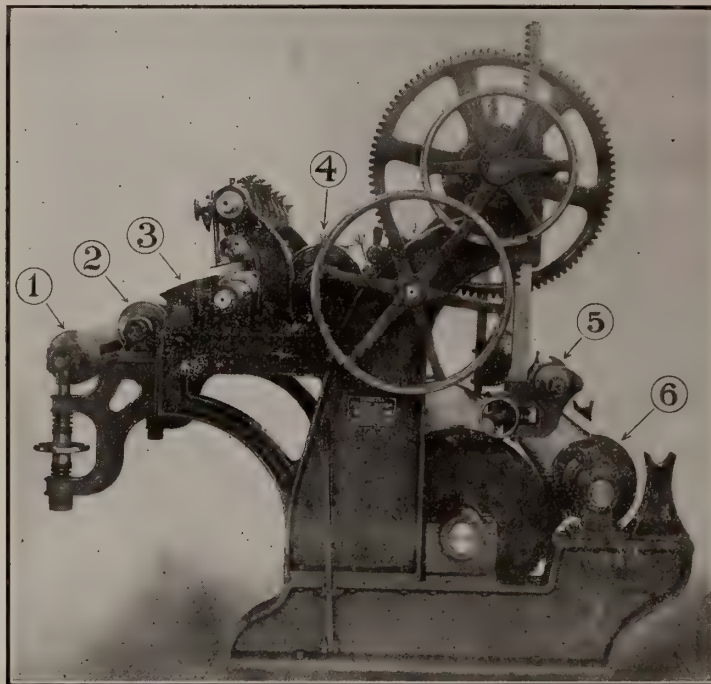
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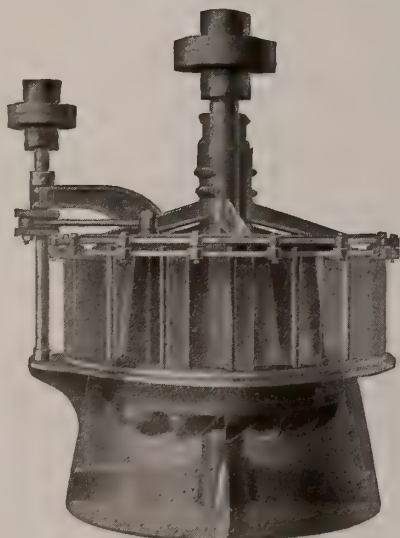
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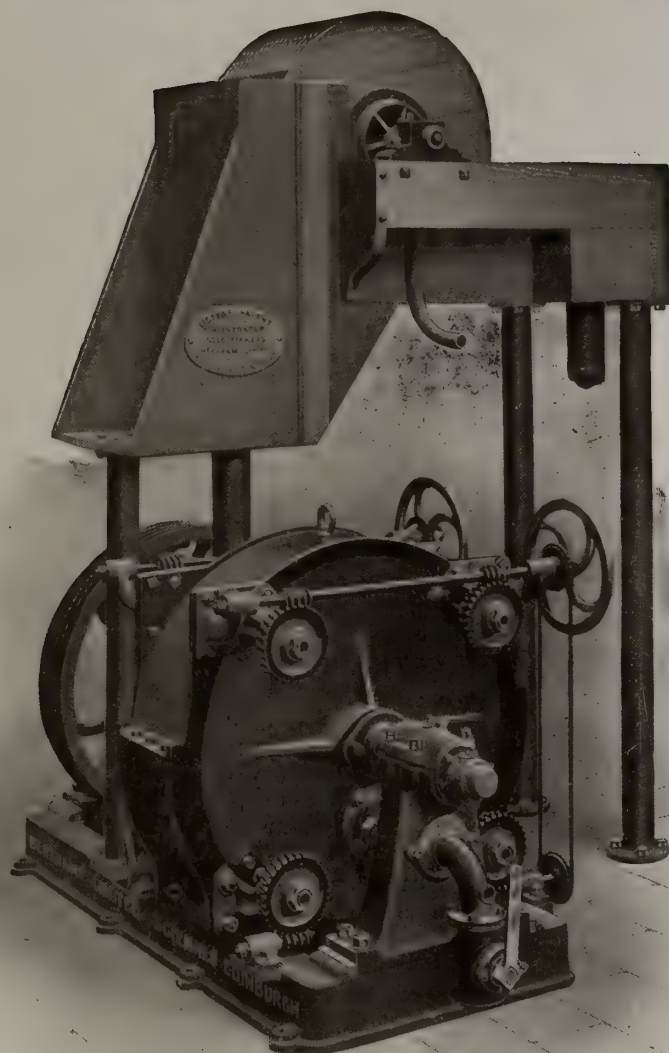
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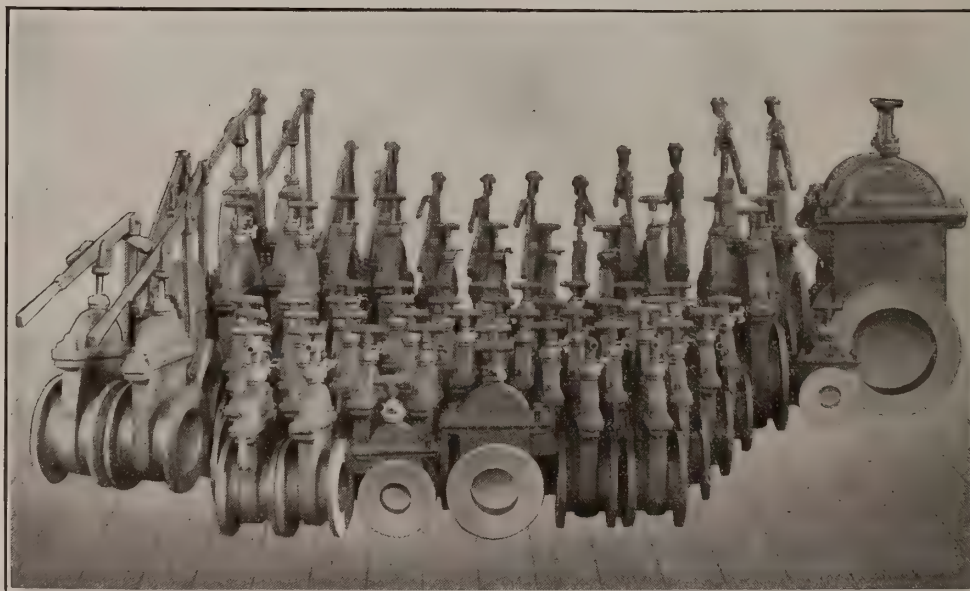
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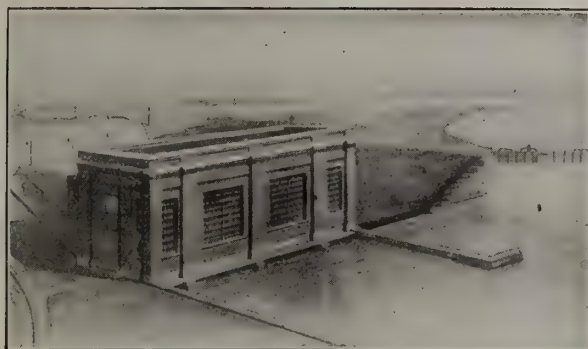
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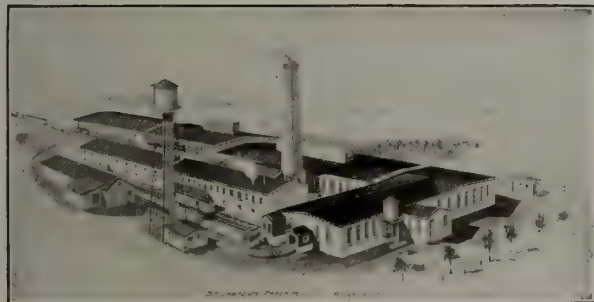
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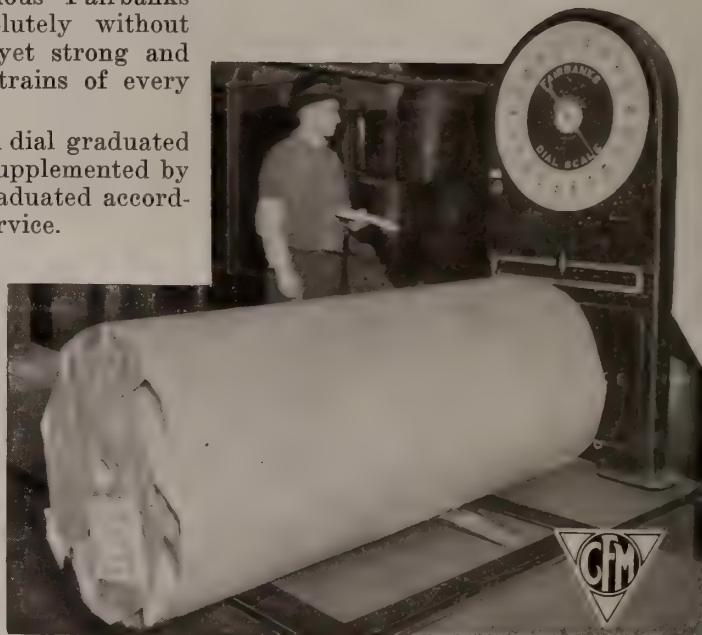
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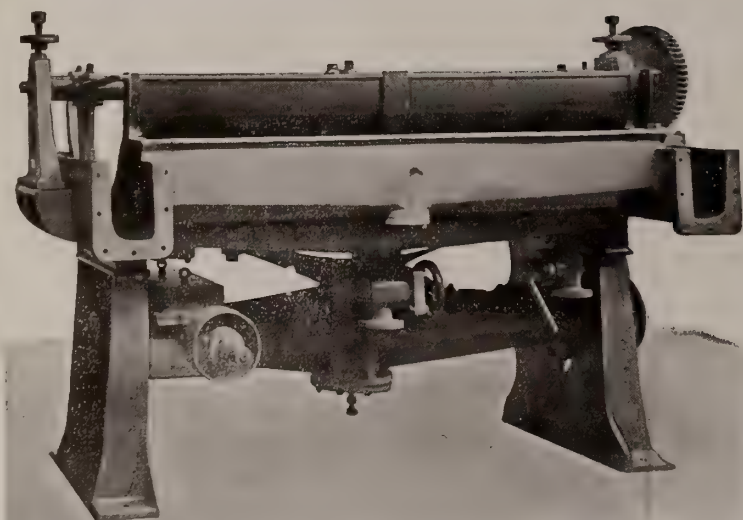
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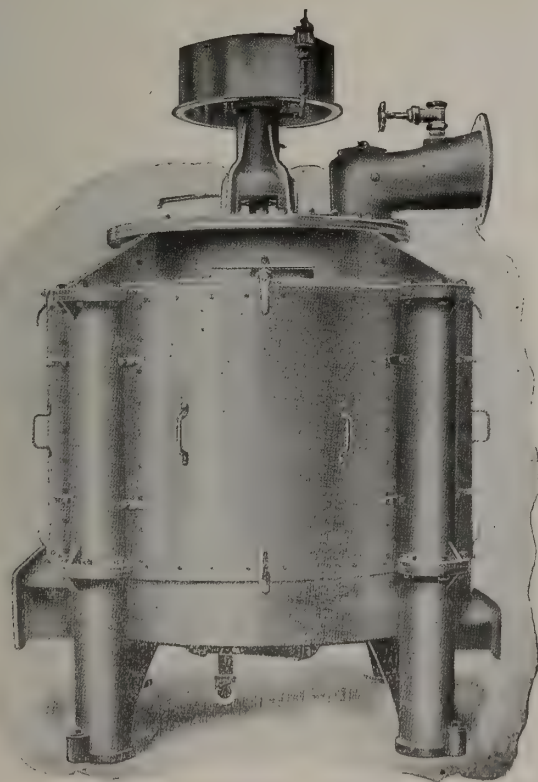
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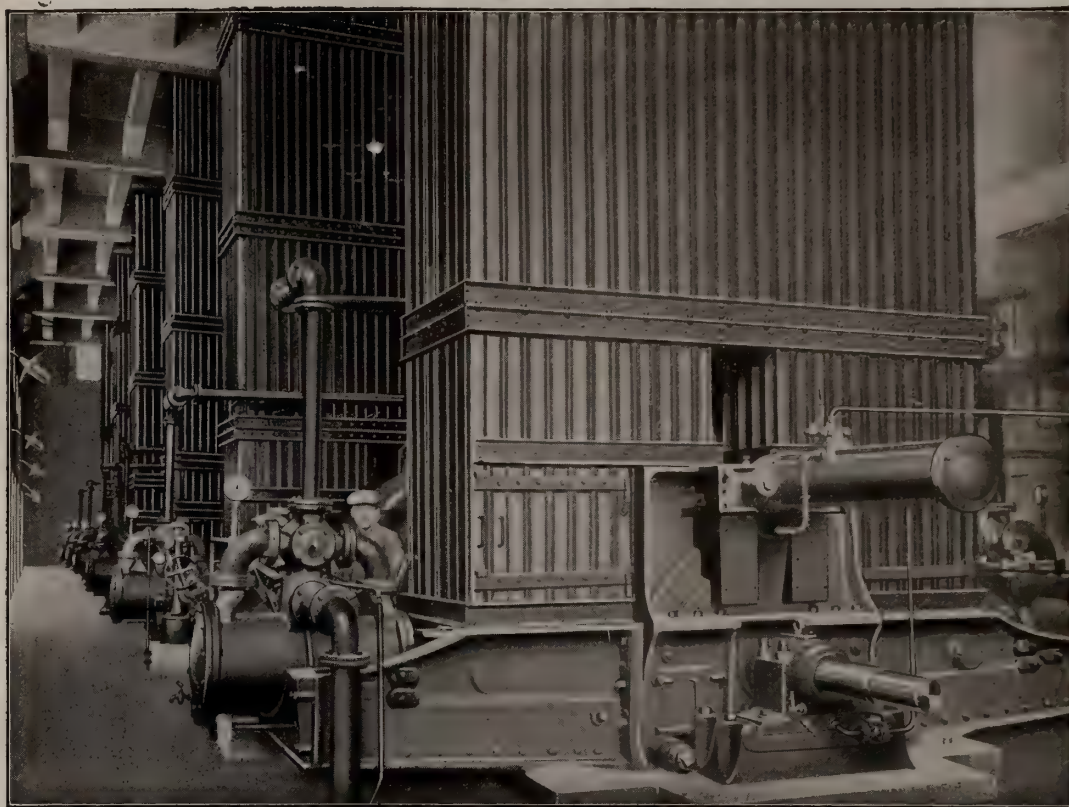
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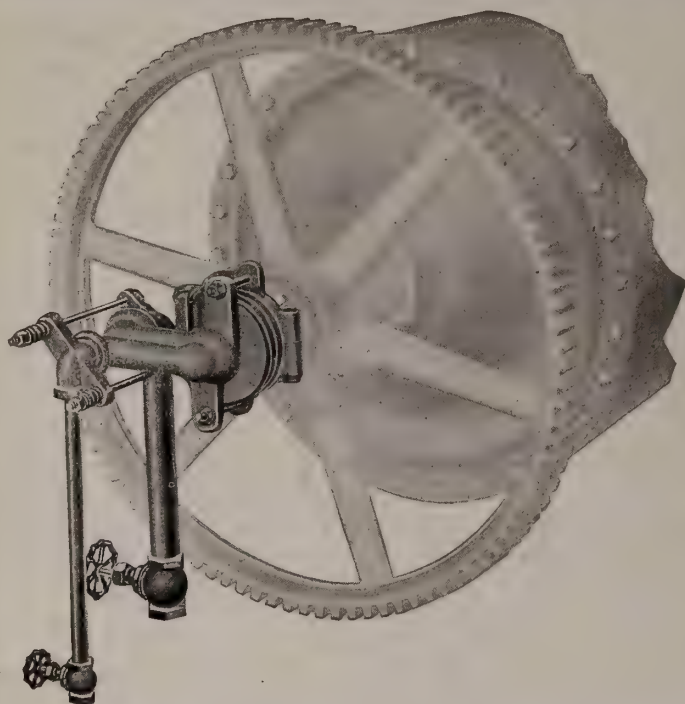
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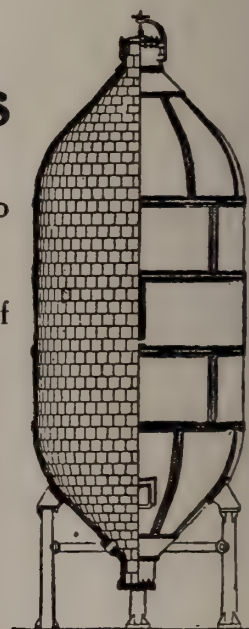
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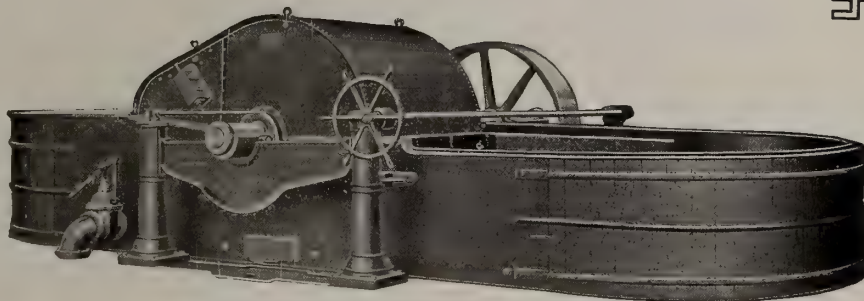


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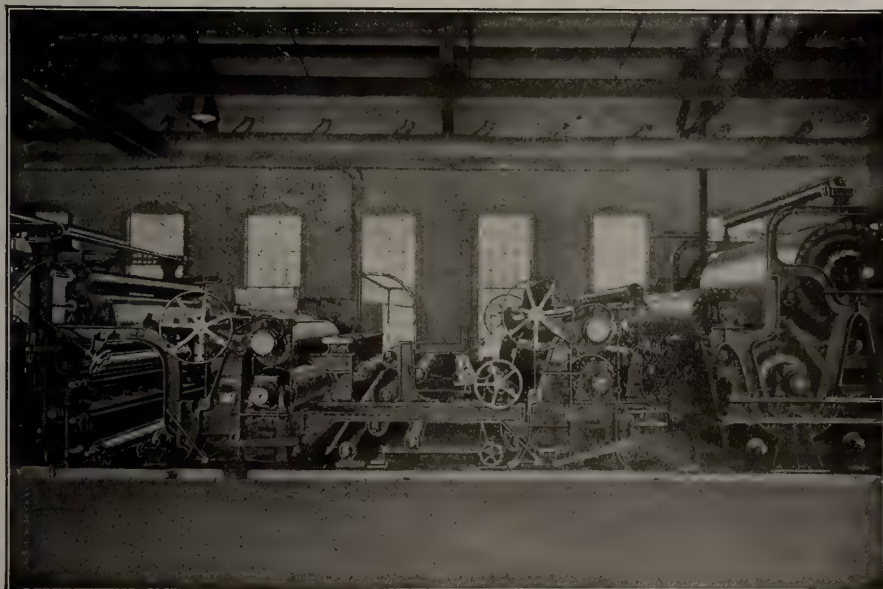
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Pulp and Paper Magazine

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

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The Swedish Embargo

The embargo placed by Sweden on the export of woodpulp to Great Britain is bound to seriously affect the regular channels of trade, and consequently will create favorable trade opportunities for countries like Canada and the United States.

Canada in particular will benefit from the embargo. This action on the part of Sweden will do more to stimulate our already rapidly growing pulp and paper industry than anything else that could have happened. Great Britain will turn to Canada for two reasons. In the first place because she cannot get her accustomed supplies of pulpwood from Sweden, and secondly because her statesmen and business men are commencing to realize more and more that trade within the Empire is the most satisfactory and most stable kind of business to have.

Since the war broke out, Great Britain has been having a great deal of trouble with neutral countries over trade matters, not only in connection with pulp and paper, but with practically all other commodities. In the case of Sweden, that country has become angered at Great Britain through the latter's interference with shipments of ore and food stuffs to Germany. In other words, the blockade which Great Britain is tightening is causing a good deal of restlessness and hostility in Sweden. Already that country has opened and detained large quantities of British mail, and it looks very much as though her edict in regard to the export of pulpwood was done for the purpose of bringing Great Britain to her knees. As a matter of fact, the embargo will injure Sweden more than it will Great Britain. The latter country will turn to Canada and the United

States for the supply of pulpwood formerly supplied from Sweden, and can snap their fingers in the faces of the Scandinavians. It will undoubtedly mean an increase in the price paid for pulpwood and paper in Great Britain, and will also raise the price of these commodities in Canada. Our paper mills already working almost to capacity will become busier than ever which will go a long way towards making Canada the pulp and paper manufacturing centre of the world.

At the present time Canada produces only about 5 per cent of the world's supply of pulp. In the fiscal year ended March 31st, 1915, Canada exported newsprint to the value of \$14,091,000, of which Great Britain took only \$180,000 worth. For the first six months of the present fiscal year, our total exports were \$7,870,000, of which Great Britain took \$106,000. Great Britain will doubtless prefer to import pulpwood from Canada, but an effort should be made not only to supply her with pulpwood, but with the finished product, newsprint as well. It is a big opportunity for Canada, and we have not the slightest doubt but that our progressive and energetic pulp and paper manufacturers will rise to the occasion and see in the Swedish embargo an opportunity for Canada to secure a larger share of Great Britain's importations of pulp and paper. Such a movement on the part of Canadian pulp and paper men is not only good business, but good patriotism.

The Spirit of the Convention

The recent gatherings held in Ottawa in connection with forestry matters and the conservation of our resources, were successful in every particular. Not only was the attendance better than usual, but the papers read and the discussion which followed were of an exceptionally high order. The proceedings were

characterized by a sympathetic interest in the vital questions under discussion.

Elsewhere in this issue of the *Pulp and Paper Magazine* appears a number of papers read before the various gatherings and papers which our readers would do well to read and study. If space permitted, every paper read before the gatherings would be reproduced, but as this is not possible, we have endeavored to select a few of the more representative and helpful addresses, firmly convinced that pulp and paper men will be measurably benefited by a perusal of these reports.

Possibly the whole spirit of the conference was summed up in the annual banquet which closed the proceedings. On that occasion several men known throughout the Dominion as firm believers in the principles of conservation and in the necessity to safeguard our forests, discussed forestry problems. Sir Wilfrid Laurier went so far as to advocate state ownership of forests, and he expounded the doctrine that any man who cut down a tree should be compelled to plant another. Sir George E. Foster, in a reminiscent speech, told of what trees and forests had meant to him, and what they should mean to every normally constituted individual. The Honorable Dr. Roche told of the excellent work being performed by the Forest Products Laboratories at McGill, while other speakers emphasized the economic value of the forests.

One came away from Ottawa feeling that some of the greatest social, economic and industrial problems connected with the Dominion were bound up in our forests. A proper solution of our forestry problems would do much towards making this country a prosperous, progressive and ideal place in which to live. A country denuded of forests becomes a desert, as has been shown in the case of a score of once populous and prosperous mediaeval countries. If Canada does not want to meet a similar fate, she must safeguard her forests.

Pulp and Paper Association

It should hardly be necessary to urge the pulp and paper men of Canada to attend the forthcoming annual meeting of their Association, but this meeting is fraught with such importance that we feel constrained to urge every member to attend.

The present time is big with possibilities for the pulp and paper men of Canada. The Swedish embargo on pulpwood presents a new and enormously important opportunity for Canadian paper men to increase their exports and to capture more of the business which was formerly done by the Scandinavian countries. The shortage of dyestuffs is another problem of the utmost importance to our pulp and paper men. Other questions relating to the conservation of our forests, the increase in freight rates, the necessity for greater co-operation and improved technical know-

ledge in connection with the manufacture of paper, are but some of the big problems awaiting solution.

The Pulp and Paper Association was only organized some two or three years ago, but already it has made a big place for itself in the industry. The members of the Association have given the lie to the old adage that "competition was the life of trade." They are showing that co-operation and not competition is the keynote of modern industry. As a result of their co-operative efforts, the pulp and paper industry in Canada is to-day in a better condition than at any time in its history. With the big problems awaiting solution, all that should be necessary is to call the attention of the members to the approaching meeting.

Provincial Forestry Reports

The annual reports of the Department of Lands and Forests in Quebec and Ontario indicate very clearly that the forests of these two Provinces are carefully and economically administered. The statement recently tabled by the Honorable Jules Allard, showed that receipts of the Forestry Department in the Province of Quebec have now risen to \$1,840,000. The statement tabled by the Hon. Mr. Fergusson, Minister of Lands, Forests and Mines in Ontario showed receipts of \$1,500,000 from the forests of that Province, of which \$928,000 came from timber dues.

The report of the Quebec Minister shows that there are 7,156,000 acres of public lands divided in this Province, an increase of 286,000 acres over the previous year. The forestry revenues were made up as follows: Ground rents, \$359,000; timber cutting rights, \$1,288,000; penalties for infractions, \$16,000; accrued interest, \$27,000; premiums on transfer, \$10,000; premiums on cutting of wood rentals, \$34,000.

A generation or more ago there was a good deal of laxity in the administration of our forest areas, with a corresponding degree of indifference on the part of the public. During recent years this has been changed and to-day business-like methods characterize all the proceedings of the Government in relation to its forests. These priceless domains are protected from fires, restrictions are imposed preventing ruthless and expensive methods of cutting, while the whole is administered in such a way as to contribute to the revenues of the country instead of being left entirely in the hands of the owners. In brief the administration of our forests is a decided improvement over the methods prevailing in the past.

MEAD NEW HEAD SPANISH RIVER

Mr. George H. Mead, of the Mead Pulp & Paper Company, Dayton, Ohio, has been elected to the presidency of the Spanish River Pulp & Paper Company, succeeding Mr. W. E. Stavert, who remains as a director of the company.

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ANNUAL MEETING CANADIAN PULP AND PAPER ASSOCIATION.

A preliminary announcement regarding the annual meeting of the Canadian Pulp and Paper Association has been sent out to members by Mr. Roy L. Campbell, the secretary-treasurer. The Pulp and Paper Magazine adds its exhortation to the members of the Association to attend the meeting. The present time is big with possibilities for the Pulp and Paper men of the Dominion. The announcement follows:

The Annual Meeting of the Canadian Pulp and Paper Association will be held in the Ritz-Carlton Hotel on Thursday, February 10th.

The complete programme has not been drafted up, but the very important work which has been done by the Association during the past year in protecting the interests of members, in extending statistical studies, and in co-ordinating the various interests within the Association, all point to a very large and successful gathering.

In addition to the business and section meetings, each of which will take up the special interests of each class of manufacture, there will be addresses of interest to all members by experts. Mr. A. D. Huff, of the Laurentide Co., Ltd., will discuss transportation problems and Mr. Ponsford will give an illustrated lecture upon safety regulations.

At the evening banquet it is expected that Mr. G. F. Steele, Secretary of the News Print Manufacturers' Association, will speak about Association work, and President Moore, of the American Paper & Pulp Association, will extend greetings from across the line. There will be one or two other speakers of note, but assurances of their presence have not yet been received.

TECHNICAL SECTION MEETING FEBRUARY 10th

In connection with the annual meeting of the main Association, the meeting of the Technical Section is of particular note. Arrangements have been made by the Chairman and Executive for a symposium on Ground Wood Pulp. Papers are expected from a couple of the experts in this line and it is hoped that every person will come prepared to discuss the practical problems which arise from day to day. In this connection also, Dr. J. S. Bates requests that every member of the Technical Section who makes ground wood pulp or papers from ground wood fibre, will bring samples for comparison and study. There are hundreds of problems in connection with wood, quality, grinder, pressure, temperature, speed, nature of stone, etc., which can engage the attention of those interested.

All interested in the Technical Section are urged to attend the annual meeting on the 10th instant.

Forestry and Conservation Conventions

Important Papers Read Before Delegates

THE FOLLOWING ARE SOME OF THE MORE IMPORTANT PAPERS READ AT THE GATHERING HELD IN OTTAWA LAST WEEK.

Report of the Committee on Forests Commission of Conservation

(By CLYDE LEAVITT, Chief Forester.)

During the past year, work in forestry and fire-protection has followed closely the lines previously laid down, and only minor new developments can be reported. The war has, for the most part, prevented consideration of needed new legislation, as well as of certain changes badly needed in policy, procedure and organization, in most of the forestry and fire-protective services throughout the country. These needs have been referred to in previous reports of the Committee on Forests. It is to be regretted that so little progress can be shown, especially in matter where the efficiency of the work could be materially increased at no additional cost.

It seems altogether probable that there will be a strong demand for Canadian timber for reconstruction in Europe, after the conclusion of the war, as well as for war purposes in the meantime. The home demand is also increasing, and conditions in the lumber industry are again becoming normal, particularly in the west, where a serious depression has existed. There is, therefore, every reason why all possible measures should be taken to conserve our forest resources, not only in the interest of Canada, but of the Empire as a whole.

Dominion Forest Reserves.

There have been no additions to the Dominion forest reserve area during the past year, consideration of such matters by Parliament having been postponed on account of the war. The present area of permanent forest reserves on Dominion lands is nearly 36,000 square miles, and some 20,000 square miles additional has been temporarily reserved, with a view of being later reserved permanently. The influence of the Commission should unquestionably be exerted to secure the permanent reservation of all non-agricultural forest lands as rapidly as the necessary information is secured.

Civil Service Reform.

Another development which has also been retarded by the war is the establishment of the merit system of appointments in the field service of the Dominion Forestry Branch. In this Branch, as also in the provincial fire protection services, the greatest single bar to efficiency is the continued selection of fire rangers on the basis of political considerations rather than of fitness to perform the responsible duties of a fire ranger. The patronage system is both inefficient and uneconomical, and the country need not anticipate securing adequate protection from forest fires until fire rangers are selected on the basis of merit. This is one

of the measures which could be made effective without any appropriation, and would, as a matter of fact, be worth far more than a material increase in appropriation. It is understood that the placing of the fire rangers of the Dominion Forestry Branch under Civil Service regulations has been delayed pending the enactment of the new Civil Service Bill. Such transfer could, however, as a matter of fact be made effective at any time by Order-in-Council would still be necessary.

Reorganization in Fire-Ranging Services.

At the annual meeting a year ago, Chief Forester MacMillan of the British Columbia service, emphasized the need for a great deal of supervision, in order to make a fire-ranging system really effective. He made the statement that because of lack of field supervision, more money is being wasted in fire protection than is used economically. While this is a broad statement, it is believed that the facts fully justify it.

Taking both Ontario and Quebec as examples, there is good reason to believe that the amount of co-ordination between the head office and the field is too small to exercise really adequate supervision over the fire-ranging staffs. The one great secret of the success achieved by the St. Maurice and Lower Ottawa forest protective associations, has been its organization. The principal feature of this organization has been the thorough supervision exercised over the men by the relatively high number of inspectors, all of whom are, in turn, closely supervised from the head office. It is believed that the several Provincial Governments could materially increase the efficiency of their fire-protection work by taking advantage, in the above respect, of the experience of the British Columbia Forest Service and of the St. Maurice and Lower Ottawa Protective Associations.

The collection and publication of statistics of forest fire losses is a matter to which increasing attention has been paid in recent years. The progress in this respect is especially notable in western Canada. In eastern Canada as a whole, the forest fire losses have not been known, on account of the incompleteness of the data published. It is important that information be collected on all fires, not only as to the area covered, but also as to the amount, character and value of the property destroyed. This is necessary in order that the intensity of fire protection may be made to fit the conditions as well as to afford a basis for the administration of the area in other respects.

Co-Operative Forest Protection.

The value of the co-operative idea in fire protection has been conclusively demonstrated by the continued success of the St. Maurice and Lower Ottawa Forest Protective Associations, which now patrol an area of more than sixteen million acres in the Province of Quebec. The organization of a similar association by the limit-holders on the upper head-waters of the Ottawa is still under consideration, no general action having resulted from the conference of last winter. There is no question but that favorable action this winter would mean great improvement in fire protection during future years. Similarly, co-operative associa-



SIR CLIFFORD SIFTON,
Chairman of the Commission on
Conservation, who was absent this
year for the first time since the Com-
mission was organized.



CLYDE LEAVITT,
Forester to the Conservation Com-
mission.



E. J. ZAVITZ,
Of the Ontario Department of Lands,
Forests and Mines.



R. H. CAMPBELL,
Dominion Director of Forestry.

tions in Ontario would greatly improve the situation in that province. The great obstacle to the organization of co-operative associations appears to be the tremendous inertia which exists only too generally, although there are some exceptions. The result is the continuance of methods of fire protection which have been proved to be long out of date, being both uneconomical and inefficient.

Slash Disposal.

The elimination of fire hazards is one of the most important features of a campaign for fire prevention. The safe disposal of logging slash would, beyond any doubt, materially reduce the danger and damage of forest fires. This practice is now firmly established in connection with sales of government timber on the national forests of the United States. There is also some form of legislation tending in the same general direction, affecting privately-owned lands in not less than eight of the individual states. If the application of this requirement to lands in private ownership is considered justified, on the basis of public interest, how much more necessary and logical is it that adequate measures be taken on public lands, which, in Canada, comprise a very large percentage of the forested area.

A good beginning has been made in this direction, in the west, in connection with the more recent timber sales in British Columbia and in the Dominion forest reserves. However, on Dominion lands under license, in the west, both inside and outside forest reserves, no apparent progress at all has been made. These licensed lands naturally contain a very high percentage of the accessible merchantable timber of the prairie provinces, and it is upon them that the great bulk of the lumbering operations take place. The cutting on lands legally a portion of the forest reserves constitutes only a small fraction of the cut on lands held under license.

It is, therefore, of even greater importance that forestry methods be insisted upon, in connection with operations on licensed lands, than on lands not included in timber limits. The future productive capacity of these lands is being very seriously impaired through lack of proper measures for the regulation of cutting operations on licensed lands.

Similarly, in eastern Canada, practically nothing has been done in the direction of slash disposal, beyond some consideration and discussion, and some small experiments.

It must always be borne in mind, in considering this whole question of slash disposal, that only such measures should be advocated as can be carried out at a reasonable cost, with results in the direction of reducing the fire hazard that will be in fair proportion to the cost.

Permit System.

Settlers' slash-burning operations now constitute probably the greatest single source of fire danger. Sometimes the settler merely exercises poor judgment as to the time of setting out a fire, or fails to have enough men on hand to prevent its spread; sometimes the trouble is due to simple carelessness or recklessness; while, in other cases, there seems only too good reason to believe that the destruction of the forest by fire is intended, on the theory that fires facilitate settlement. Whatever the reason, experience has shown conclusively that, while the use of fire is undoubtedly necessary in preparing agricultural forest land for cultivation, some means of controlling this situation is

essential to good forest protection on adjoining lands. The most satisfactory method so far discovered is the system of prohibiting the setting out of clearing fires except upon permit issued by a government officer. Reports received from British Columbia and Quebec, as well as from a number of the States, show that this system has proved a notable success wherever given a fair trial, and that it can be handled within reasonable limits of cost. The adoption of the permit system in certain portions of northern Ontario is particularly suggested. In Quebec, there is needed an increase in the organization of the Forest Protection Branch, in order to provide for the administration of the permit system outside the territory of the St. Maurice and Lower Ottawa Forest Protective Associations, on the same basis of efficiency as inside, where a sufficient staff has been provided to give the permit system a fair trial, and where it has proved an undoubted success. Also, the close season should be extended to cover the period between April 1 and November 15, instead of the shorter period now in effect. New Brunswick has authorized the permit system in Hazen and Grimmer settlements, Restigouche County, but it is believed that this provision should be somewhat extended, with necessary provision for enforcement.

In Alberta, Saskatchewan and Manitoba, legislation by the provinces is necessary in order to regulate settlers' burning operations in proximity to forest reserves. It is suggested that the permit system be authorized in a belt extending six miles outside of forest reserve boundaries. Some amendments to Dominion legislation along the lines of fire protection are also needed, in order to supplement provincial legislation along the lines of fire protection.

New Brunswick Forest Survey.

The outstanding feature of forestry progress during the year is the announcement by the Government of New Brunswick that definite steps have been taken toward beginning the forest survey and classification of Crown lands, for which legislative provision was made early in 1913. The appointment of a technically trained forester to take charge of the project will probably be announced in the near future. The Crown lands comprise an area of over ten thousand square miles, or approximately one-third the total area of the province. The proposed action is entirely logical in view of the fact that the province derives an annual revenue of over half a million dollars from these lands. A careful stock-taking, together with a thorough and scientific investigation of the questions of reproduction and rate of growth, will be required to determine the means necessary for the perpetuation of the forest and of the revenues resulting from its exploitation. The forester for the Commission has been consulted in connection with the arrangements for the proposed forest survey, and it is hoped that arrangements can be made for further co-operation, during the coming year, in connection with some of the more technical features of the work in the field.

Railway Fire Protection.

Good progress has been made during the past year in the railway fire protection work, which has been handled during the past four seasons under the regulations of the Board of Railway Commissioners. The co-operation of the various Dominion and provincial fire-protective organizations has been given freely, and, with very few exceptions, the railways have also co-operated heartily and effectively.

A total of 674 fires in forest sections is reported as having originated within 300 feet of the lines of railways subject to the Board's jurisdiction. Of these, 43.5 per cent are definitely attributed to railway agencies, 27.5 per cent to known causes other than railways, and 29 per cent to unknown causes. Of the total area burned over, amounting to about 40,000 acres, 31 per cent is chargeable against the railways, 25 per cent to known causes other than railways, and 44 per cent of the damage is due to known causes other than estimated at \$81,565.00. Of this, the railways are definitely charged with only 10 per cent, while 31 per cent of the damage is due to known causes other than railways, and 59 per cent to unknown causes. We thus have the railways, exclusive of Government lines and a few having provincial charters, directly charged with less than half of the total number of fires reported as having originated within 300 feet of the track; these burned over less than one-third of the total area reported, and did only one-tenth of the total estimated damage. The showing is thus distinctly favorable to the railways, especially when it is considered that this 10 per cent of damage amounts to a total of less than \$8,400. These figures show that the railways have been remarkably efficient in extinguishing their own fires, as well as those due to outside causes.

Of all fires reported, the causes are as follows: locomotives, 33 per cent; railway employes, 10 per cent; other railway mechanical causes, 50 per cent; tramps, etc., 11.5 per cent; settlers, 12 per cent; other known causes, 4 per cent; unknown causes, 29 per cent. It will thus be seen that the carelessness of tramps and settlers constitutes a very serious source of fire danger along railways, these two elements combined accounting for nearly one-fourth of the total number of fires reported.

Some progress can be reported in the reduction of fire hazards along railway lines by the disposal of inflammable debris adjacent to railway rights of way.

The work in Algonquin Park has been continued, under co-operation between the Grand Trunk railway and the Department of Lands, Forests and Mines of Ontario. This means much better fire protection in Algonquin Park, and will be appreciated by the general public.

Similarly, in Rocky Mountains Park, Alberta, the Dominion Parks Branch has used a large number of interned alien enemies in disposing of inflammable debris along the Canadian Pacific railway and along the new automobile highway under construction between Banff and Lake Louise.

In northern Ontario, J. R. Booth has disposed of inflammable debris at certain points on his limits, along the Canadian Northern Railway east of North Bay. This action was taken for the specific purpose of reducing the fire danger to standing timber, and it is to be hoped that the example will be followed by other limit-holders.

In Quebec, the Provincial Government has under consideration the enactment of legislation under which the holders of timber limits adjacent to railway lines may be required to dispose of inflammable debris on a narrow strip next the right of way. The influence of the Commission should be exerted in favor of this proposition. The action proposed should, however, be extended to cover privately-owned lands as well.

The fire protection situation on Government railways has improved somewhat, but, on the whole, still lacks much of being organized on the same basis of effectiveness as the larger private railway systems.

In New Brunswick, a satisfactory co-operative patrol has been arranged between the Government Railways management and the provincial authorities, covering portions of the Transcontinental and International. In other provinces, while some progress has been made, the action lacks the consistency of that taken in New Brunswick. In Quebec, for example, it has not even yet been found possible for the officials of the St. Maurice Forest Protective Association to reach an understanding with the Government Railways management. This situation is distinctly inconsistent with that existing on privately-owned lines subject to the Board of Railway Commissioners, where the whole cost of patrol is borne by the railways themselves, the various governmental agencies furnishing only the inspection.

The right of way situation has shown some improvement but a great deal of work still requires to be done along the Transcontinental and International railways, before right of way conditions will approximate the Government standard for private lines.

Almost the worst possible conditions, from the point of view of fire prevention, have existed along the line of the Hudson Bay Railway, now under construction in Manitoba. Fire protective appliances on the construction locomotives have been either lacking or frequently out of order. Neither the contractors nor the laborers have any direct interest in preventing fires along the line, and enforcement of the provision of the contract covering the prevention and extinguishing of fires by them have been altogether lacking. As a result, probably not less than half a million acres of land adjacent to the Hudson Bay Railway were burned over during the past season, causing a material loss in timber and in fur-bearing animals. There seems, however, some reason for the hope that this situation will be materially improved during 1916.

Forest Protection Report.

The report on forest protection in Canada for 1915 and 1914 has been published and is now in process of distribution. This report contains a large amount of material bearing on the general forestry and fire protection situation throughout Canada, as well as special reports prepared by J. H. White and Dr. C. D. Howe, as a result of field studies made for the Commission during the seasons of 1913 and 1914. It is proposed that the plan of issuing forest protection reports biennially be continued, supplemented by separate publication of special reports where circumstances warrant.

Inventory of Forest Resources.

Continued progress has been made in the inventory of forest resources of British Columbia and Saskatchewan, and both projects are now within sight of completion. It is expected that the field work will be finished by spring, and the reports by July 1.

The work in British Columbia has, since the beginning in 1913, been handled by Dr. H. N. Whitford and R. D. Craig. A large percentage of the accessible merchantable timber is held under license, lease, or other form of disposal, and most of it has been cruised from once to several times by the present or former owners. The plan adopted last year of circularizing limit-holders and other timber owners has been continued, and has met with very gratifying success. As a result, cruisers'

reports have been secured on approximately 70 per cent of the alienated lands, and it is expected that this figure will be increased to 80 per cent by spring. The varying cruises are checked against each other, and, to a limited extent, by personal observation. In addition, rough estimates of large areas have been made by the Provincial Forest Branch, and, in the railway belt, by the Dominion Forestry Branch, all of which information has been made freely available for our purposes, as have been the cruises made by the Canadian Pacific Railway. The timber owners have evinced a very keen interest in this investigation, and appreciate the value of having accurate information as to the forest resources of the province. The total cost of the investigation, chargeable to the Commission, exclusive of publication, will be approximately five cents per square mile, for the 375,000 square miles of the province. The collection of this information at the low figure named would never have been possible, had it not been for the large amount of detailed information, secured at great expense by the British Columbia Forest Service and by the Dominion Forestry Branch.

The work in Saskatchewan was also started in 1913, under J. C. Blumer. In previous years the more accessible forest regions of the province were covered, and much information was secured from limit-holders and the Dominion Forestry Branch. During the past year, the investigation has been extended into the far north, where relatively little specific information is available, and Mr. Plumer has had to depend largely upon his own observations, supplemented to a certain extent by interviews with forest rangers, traders, trappers, missionaries, timbermen and other local residents. To date, information has been collected on about 120,000 square miles, at a cost of around three cents per square mile. It has been definitely shown that Saskatchewan's forest belt is a region containing only a relatively small amount of large timber, but a large quantity of small timber. Fires have done enormous damage, and have reduced the stand to a fraction of what it has been and should be, and will again be, if the great difficulties incident to establishing an effective system of fire protection can be overcome. It appears now that the total amount of spruce saw timber north of the Churchill river will not exceed one hundred million feet, making the total for the province about one hundred thousand million feet, a somewhat smaller figure than seemed probable a year ago. However, the vast amount of young growth renders it highly important that a much better system of fire protection be provided than has ever been possible under existing conditions of limited funds and the selection of fire-rangers under the patronage system.

It now seems certain that our appropriation for the coming fiscal year will be reduced considerably below that available during the current year, and the serious question arises as to the form in which the limited amount available for forestry work shall be expended, after the completion of the reports on British Columbia and Saskatchewan. The choice is, apparently, whether the investigation of forest resources in other provinces, previously planned, shall be temporarily cropped or greatly restricted, in order to provide for the publication of the reports on British Columbia and Saskatchewan as soon as they are completed or whether the publication of these reports shall be only slightly delayed, making the charge come against the appropriation for 1917, in order that we may retain our staff and continue our field work in other provinces. For several reasons, the latter course seems most advisable. In the first place, the delay in publishing the British Colum-

bia and Saskatchewan reports would not be very serious, since the text will not be completed until about July 1, after which some weeks would necessarily be required for editing the manuscripts, securing tenders, etc. The actual publication is a process requiring months, so that only a relatively short delay in the awarding of the printing contracts would be necessary, if any, in order to throw the charge for printing against the appropriation for 1917. The experience gained by our three experts, who have now been employed more than two years on this specialized line of investigation, is a very valuable asset, which would be lost by their discontinuance; and the Committee believe that unless such action is absolutely unavoidable, it would be most unfortunate to interrupt the study until the forest resources of the other provinces of the Dominion have been reported upon.

Silvicultural Problems of Forests Reserves

By DR. FERNOW,

Before the Commission of Conservation of Canada,
Ottawa, 1916.

Last summer, through the courtesy of the Director of the Dominion Forestry Branch, and in his company, I had the privilege of inspecting conditions in some of the Dominion Forest Reserves in the prairie provinces, and of some parts of the Rocky Mountain Reserves.

This inspection was made with a view of enabling me, as chairman of the newly established Advisory Board of the Forestry Branch, to formulate propositions for investigatory work as a basis for an eventual technical management of the Reserves.

While ten weeks travel can, to be sure, give only a very superficial insight into conditions and problems, contact with actualities and intercourse with the man in charge permits at least a judgment of the general requirements in the administration and management of these properties. Some of these I have been asked to discuss before the Commission.

The practical wisdom of inaugurating the forest reserve policy would, I believe, be admitted by any one on general principles, but by him who visits the reservations and secures even only a slight acquaintance with the actual conditions surrounding them, any doubts as to the wisdom in each particular case will vanish, and the conviction will be strengthened not only that these reservations should become or remain without question permanent, but that they should be added to, but that they should remain under the control of the Dominion, which can much better than the provinces afford to carry the burden of the dead work that must be done to make these properties serve their object, namely to furnish continuous wood supplies to the surrounding settlements. The visitor will also realize, that to fulfill their function, namely to furnish wood supplies, a systematic technical management is a more or less urgent necessity, and should be inaugurated as early as possible upon the basis of carefully prepared working plans.

So far, in the minds of the public not only, but of officials as well, the problem of the forest reserves has appeared of the same nature as that of the mere administration of timber lands; so far, indeed, hardly more than a timber land administration has been attempted, albeit with a somewhat more conservative disposal of available supplies. Of the practice of forestry, the technical art, there is as yet hardly a beginning. For such an administration as has been hither-

to attempted technical men and technical knowledge are hardly required. The fact that most reserves are under the management of non-technical men bears out this contention: Forestry practice is still absent.

The application of forestry means efforts to reproduce the harvested crops, efforts to make the reserves continuous producers, to manage them with a view to sustained yield, as it is technically called, which can be done only by application of silviculture, the art of forest crop production.

The principal reason for the absence of such forestry practice is probably an economic one. Most of the reserves are located where, as yet, no market, or only a limited market exists, and, moreover, the best timber, the marketable portion on most of the reserves, has been placed in timber limits, which were haggled away before the reserves were created, hence the administration was financially handicapped at the start.

In addition, the administrator of the Reserve, if he consulted the technical man, would have found out that to reproduce the forest crop costs money just the same as reproducing the farm crop, and as he is accustomed to deal at any rate only with present-day affairs, he is apt to let the future take care of itself and to confine himself to present-day timber sales of whatever available supplies are at hand. He thinks that if he has made provision against fire danger and for reduction of waste generally, perhaps restricting the cut to a diameter limit, he has done all that can be expected. Surely, these administrative measures are of primary importance, and need first consideration, but, if this were to remain the proper attitude, the Reserves would fail in their object, and altogether the prosperity of the country would suffer in the future.

The forester also takes into consideration the economic conditions under which he is to practice his technical art; he also is shy at avoidable expenditures, but he makes a long range calculation. His business is to provide for the future, and hence he looks into and calculates with the future, and he knows from the experience of other nations that it requires expenditure and apparently dead work in the present to secure results for the future.

His finance calculation is for the long run!

In last year's report of the Commission, I ventured to make such a calculation for the Trent watershed, to show how profitable such expenditures can be made.

We must not allow ourselves to be deterred by the fact that the forest crop is slow in maturing, that it takes many decades from the seedling to the log tree, and not less than 60 to 120 years for a profitable crop to mature.

On the contrary, this is the very reason for a timely beginning to start the crop. It is this time element which makes the forestry business unattractive to private enterprises, and furnishes the argument for government to engage in it, the justification for setting aside forest reserves and for handling them for the sustained yield under systematic forest management. Only a government with the duty to consider a long future, with providential functions, can afford to do this.

From the standpoint of the more or less immediate need of inaugurating such systematic forest management, we may classify the Reserves into four or five classes.

There are some Reserves, located near well populat-

ed districts, whose natural supplies are already being heavily drawn upon, as, e.g., the Cypress Hills Reserves in Alberta and Saskatchewan; the Pines and Nisbet Reserves in Saskatchewan; the Turtle Mountain Reserve in Manitoba. Here, there should be immediately inaugurated a well considered felling plan, and a judicious reforestation programme. Under present methods of mere exploitation the virgin supplies must be soon exhausted, unless adequate provision is made at once for a new crop.

Next, we have Reserves which, as yet, are but lightly drawn upon, but which within the next decade promise to come into market more fully, as the settlements come up to their boundaries and the settlers' wood supplies are giving out. Such are the Duck and Riding Mountain Reserves in Manitoba. Here, every opportunity for more careful study of the silvicultural problems should be embraced, and a thorough preparation for technical management should be begun now, in anticipation of their coming fully into market soon.

Then there are a number of Reserves that were not set aside on account of the timber, which was either used up, burned up, or naturally absent, but on account of the unsuitability of the soil for farm purposes and the possibility of using it for timber crops. Such Reserves are the Sprucewoods Reserve in Manitoba, partly wooded, and the Manitou Reserve in Saskatchewan, largely without natural growth, and several other sand hill territories. Here, planting operations should be begun at once, first trial plantations with various species and methods, and, after experience has been gained, on a larger scale, with or without assistance by natural regeneration as the case may be.

Lastly, there are extensive Reserves in the northern prairie regions, and in the Rocky Mountains, which are as yet so far removed from market as to place them last from the standpoint of the need of technical management. Here the problems are still mainly of administrative character; to prevent further deterioration of the properties, especially by fire; to regulate the use of whatever resources may be available, like, e.g., pasturage; to improve these resources; to make them accessible, and, as far as technical interest is concerned, to study the silvicultural problems against the day when they must be solved.

All Reserves, however, once set aside for permanency, should be administered under systematic working plans, more or less elaborate, especially with reference to their utilization; and, if they are to do justice not only to the present, but also to future needs, such plans must eventually provide for the application of proper silvicultural methods for securing a continuance of wood crops.

There is no other productive business that needs so much planned and conservative procedure as the business of producing forest crops, for the reason that not only do these crops mature slowly, but there is little chance to advance and improve the crop after it is once started; its proper start, therefore, is the important thing. The manufacturer can change his processes in a few weeks, the farmer from year to year, but the forester, once his crop is started, may not change his procedure for a century, and there is only limited chance during the life of the crop to interfere with its development; therefore, the necessity of careful planning.

If our Reserves were all first-class, useful virgin timber, the working plans would be a simple affair.

They would consist in prescribing the cutting of the year's requirements in such a manner as to secure reproduction—a natural regeneration. But this is by no means the condition, even in the well wooded Reserves; only small portions consist of mature, useful timber largely spruce; large portions, as a result of fires, represent young growth, or are grown up to undesirable or at least less useful species, principally aspen; some of these aspen stands are rotten and useless; some areas are mere brushlands, and still others entirely waste—delapidated woods which only a laborious building-up process can bring into desirable productive condition, and that means careful planning and eventually the necessity of expenditure in starting future crops.

In this connection, there is one feature of importance to which I may refer in passing, that pertains at least to some of the Reserves in the prairie region, which is encouraging in this respect, namely, the remarkable rapidity of growth, which excels that of the Eastern provinces, and promises early maturing of a valuable crop.

This statement has special reference to the white spruce, which on the deep soils which it occupies grows for a long time on the average at a rate of 5 to 6 years to the inch, making a 15-inch tree, 80 feet in height, in 80 years.

In order then, to inaugurate a systematic management of any property, the character and condition of the property needs to be known in detail, next its administrative, its economic, and its technical problems must be recognized and solved.

These requirements in a forest property involve first of all a detailed forest survey, including a close stocktaking, and mapping; next, a suitable subdivision into smaller units or compartments for convenient handling; a study of the materials that can be marketed, and a study, not only, but a stimulation of the market for the minor materials; next a study of growth conditions and their effect and results in regard to regeneration and in regard to increment. Based on this information an admissible felling budget may then be calculated, and the felling areas may be suitably located; finally, study and experiment is necessary to learn how the local silvicultural difficulties may be overcome.

These are the data which must be ascertained in order to formulate a working plan and to inaugurate a technical management. There is no need here, I hope, to insist on the necessity of employing men with professional training to collect these data and to apply them; no need to insist that permanency of tenure of office and continuity of organization is essential to successful execution of the plans.

I propose now to point out a few illustrations of the kind of silvicultural problems that must eventually be solved by experimentation, those that arise in attempts to secure a new crop of desirable character.

Each Reserve has its special problems, according to its character and composition.

The Aspen Problem.

In the Riding and Duck Mountains, we find conditions and problems very much alike. The most valuable species here at present is the White spruce, hence it is this species for which the management would have to be devised, especially as at least 60 per cent of the soil is adapted to this species.

Unfortunately, numerically another species, the as-

pen, is most prominent, as a result undoubtedly of fires which in past ages and also in modern times have reduced the spruce to only a limited amount; hence the spruce must be re-established in competition with the aspen.

There is no difficulty on this account, in the nature of the two species, for the spruce is a tolerant species and can stand the light shade which the aspen gives, almost without being retarded in its growth. The only problem is that of the profitable or at least costless removal of the surplus of aspen.

Aspen is by no means a useless weed tree. Not only is it valuable as a mere soil cover, recuperating the soil after fires, but it furnishes an acceptable fuel-wood and pulpwood, and even an inferior grade of lumber, especially for flooring. Aspen also lends itself to use for small woodenware, boxes, crates, pails, excelsior. The establishment of industries near or in the Reserves using this material is probably possible, and should be brought about by investigating the possibilities of securing a sufficient supply of the raw material and other factors favoring such industries.

Unfortunately, it is liable at an early age to rot. Large areas of mature aspen, which look as if they would cut satisfactory saw material, are to the extent of 50 to 80 per cent "punky," and so far as known useless. The silvicultural problem of re-establishing spruce must wait upon the solution of the technological problem of finding a use for "punky" wood, or a use where at least a certain per cent of rot is not objectionable.

Such large areas of pure aspen of all ages are found in these and other Reserves that it will become an unavoidable necessity to work in part for aspen reproduction, and in that connection to solve the problem of reducing or stopping the progress of the disease, keeping it out of the younger growths that are not yet affected.

The aspen problem is, indeed, a general one throughout the whole Eastern Dominion; the development of its profitable utilizations should be made one of the studies of the Forest Products Laboratories.

The Underbrush Problem.

There is little or no difficulty in establishing spruce under aspen because of the shade endurance of the latter, but another, worse inimical agency comes in to make difficulty. The light shade of the aspen favors the establishment of a dense underbrush, especially of hazel, with an admixture of half a dozen other shrubs. This underbrush keeps out the spruce, keeps it from establishing itself by natural seeding, and would choke it out if planted, and hence must be removed before a young crop of spruce, and even of aspen, could be established. Experiments are needed to determine the cheapest effective method of dealing with this trouble.

The inquiry would be as to whether cutting or burning produce the more favorable conditions, and at what time of the year it is best to do the one or the other.

Planting Problems.

The desire of the forester is to secure his crop, if possible, by natural regeneration; that is to so handle the mature crop that the seeds falling from it establish the new crop before the seed trees are all removed; this in order to avoid the outlay for planting. But there are large areas in these Reserves on which no old crop of desirable species is to be found, and it be-

comes necessary to establish such species by planting. The problem, then, is to find the most suitable species and the cheapest successful manner of propagation.

To gain an insight as to what species to introduce, trial plantations on a small scale are indicated.

It is my impression that not only in the aforementioned forestless Reserves, and where desirable species are lacking, but also in the well wooded ones, planting will be found often preferable to reliance on natural regeneration.

While the apparent economy in relying on Nature's ability to establish a new crop is in favor of natural regeneration, avoiding the cash outlay necessary to start the crop by artificial means, sowing or planting by hand, in the end result the latter often proves the cheaper.

To use Nature as a planter requires knowledge, judgment and skill not only, but lucky weather conditions; satisfactory seed production and favorable conditions of the ground for germination and growth of the seedlings. This combination of favorable circumstances does not occur frequently. On the other hand, by growing seedlings in nurseries where they can be given the best care, and setting out plants, success can be forced, and especially time can be saved.

Hence, early attention should be given to finding out the best materials and methods of planting.

The Jack Pine Problem.

Large areas of sandy soils are covered with a dense growth of pure Jack pine, standing so dense that each tree has little chance for development, hence the individual development is extremely slow. By reducing the number per acre, i.e., by thinning, as it is technically called, the remaining stand can be given opportunity for better development.

The problem is to find out at what time of the life of the stand to thin and how many trees to the acre promise the most satisfactory result.

The most valuable use of the Jack pine is for railroad ties, and it would, therefore, be desirable to grow tie trees. For this purpose, there is no need of freedom from knots, hence branchiness is no objection, and the increase in increment due to fully developed crowns that can develop in open stand may be secured without injuring quality. That means an early and severe opening up is indicated, only taking care not to expose the soil too much at a time.

The Jack pine is a rapid grower when young, but not persistent, hence this tendency should be utilized by giving it a chance to develop its rapid rate early. This may, perhaps, be done by reducing the number in the stand early to, say, 300 or 400 trees per acre or perhaps even less.

The narrow-minded manager will object that the operation would not pay because, perhaps, he could not dispose of the material coming from the thinnings profitably, but if it could be shown that instead of having to wait 80 to 90 years for a 5-tie tree to develop, a full crop of railroad ties, 1,500 to the acre, could be produced in 40 to 50 years, the profitableness of the operation might justify its inauguration even without the possibility of disposal of the thinnings. Experiments, then, for determining the most satisfactory density of these stands should be undertaken at once.

The possibility of shortening the time of production of sizeable materials by a rational thinning practice has even in Germany been fully realized only during the last 30 years, and now, not only are from 25 to 50

and more per cent of the final harvest crop secured by thinnings, without reducing the amount of the harvest crop, but the rotation as far as it is designed to produce sizes can be reduced at least 20 years.

It is desirable to institute thinning experiments in other than the Jack pine stands.

The Muskeg Problem.

Such experiments suggest themselves at once also for the Black spruce stands on the peaty muskeg areas which occupy such large extent in the Reserves, and usually grow in overcrowded condition, retarding the development to size of the single individual. Whether by thinning, the rate of growth can be changed could be easily found out. The probability, however, is that lowering the water-table would show better results.

Altogether, the problem of the proper use of these extensive peat bogs is one that should early occupy the attention both of the Forestry Branch and the Agricultural Department, for there is hidden in them a great resource that it has so far not been given to us to fully realize.

The Fallen Timber Problem.

In the Rocky Mountain Reserves fires have killed large areas of mature growth, and as a result there are thousands of acres of windfalls covering the ground with a labyrinthian maze of down-trees, which make the areas almost inaccessible and unmanageable for cropping. What can be done with this unfortunate condition? After some time this material rots, disintegrates and becomes a part of the soil, but in the alpine climate this process takes a long time.

Meanwhile, these areas form also dangerous fire traps.

Here again, the Forest Products Laboratories may be able to work out a solution, devising means of utilizing such material.

Altogether, the problem of finding use for minor wood materials is one that would often make it economically possible to solve the silvicultural problems.

There are, then, a host of problems which it takes time to solve. Their solution should be attempted at an early date. This is possible by experiment on a small scale before the necessity of solving them on a large scale arrives. But it should be realized that the answers to these inquiries by experiment come as slow almost as the crop itself for which they are made.

Therefore, the time to inaugurate them is now. Fortunately, the experiments outside of requiring careful and judicious planning can be made with very small expense, and considerations of economy, due to the exigencies of the war, need, perhaps, not delay them.

Dominion Director of Forestry on "Preparedness"

It is a common saying among travellers that a Chinese family would live on what a Canadian family wastes. There was something of this idea in the address of Mr. R. H. Campbell, Dominion Director of Forestry on "Forestry and the Future," but applied on broad lines to the present situation in Canada and in Europe. He did not refer to China, but he showed that much of the military and industrial power and

"preparedness" which has so long enabled Germany to hold out against the Allies was due to her organization whereby she turned all her resources to the best account, and particularly her forests. Canada was determined to exert all strength possible to aid in the winning of the war, and in developing the Empire afterwards, and one of the ways in which she could do this was by a thorough and systematic "mobilization" of her forests instead of the haphazard exploitation that had taken place in the past. At one stroke he knocked on the head the old idea that a forest country could never be highly developed industrially by showing that Belgium, with a population of 652 per square miles (as against Canada's 2 per mile) with highly intensified agriculture and industry, had in recent years developed her forests until they covered 18 per cent of her land area. In different parts of Canada, as in the Trent Valley, some deforested areas were proving no good for agriculture, and would degenerate into deserts if not again covered with forests. For the moment there was plenty of timber in Canada, but much of our forest growth consisted of young trees, and if these were not protected our future supply will be greatly curtailed. "Preparedness and Production" were two words of which Canadians now knew the meaning, and one of the best ways for increasing both was by a systematic co-operative effort among Federal, Provincial and Municipal authorities to protect our forests and by the application of science to use all forest products to the best advantage. It was for this reason that the Forest Products Laboratories of Canada had been established by the Department of the Interior. Germany was claiming that she could get on without gun cotton by using wood fibre. Whether that were so or not, acetone, one of the materials required in making cordite, was a product of the distillation of hardwood. This showed just one of the ways how Canada could assist in the struggle by the better knowledge of, and fuller employment of, her forest resources. Mr. Campbell's plea was that this higher development should be undertaken immediately for the strengthening of Canada and the Empire now and in the future.

Fighting Forest Fires by Co-operation

The Work of the St. Maurice Forest Protective Association in Quebec.

Given at the annual meeting of the Canadian Forestry Association, January 20th, by Mr. S. Lawrence deCarteret, President of the St. Maurice Forest Protective Association.

How determined action on the part of a group of Quebec limit holders succeeded in cutting down the loss from forest fires to an almost negligible degree, was the gist of an entertaining address given by Mr. Lawrence deCarteret, President of the St. Maurice Forest Protective Association. In the course of his address Mr. deCarteret brought out many remarkable facts supporting the argument for co-operative effort by the lessees of limits. Indeed, the speaker proved conclusively that as far as results are concerned no government system has yet reached the same class of efficiency. Since the Association came into existence

over 800 fires were extinguished; over 80 per cent of which were put out by the rangers, themselves, without outside assistance or extra expense. In the same period sixty-three thousand fire notices and signs have been posted, and twenty-two thousand leaflets and booklets distributed. No less than twelve thousand square miles of timber lands are comprised in the territory over which the St. Maurice inspectors and rangers hold sway. This area is divided into six divisions, each in charge of an inspector, these divisions being further sub-divided into thirty-two districts or patrols, seventeen of which are patrolled by men in canoes, seven by men on horseback, three by men on foot, one by man in lookout station, and four railway patrols by men in motor cars. During the past season eighteen special rangers were put on the drives with a construction crew. Mr. deCarteret emphasized the high importance of close supervision of the rangers and their work so that the maximum value was obtained from the season's services of each man.

The cost of maintaining the protective services of the St. Maurice system, which with the Lower Ottawa Forest Protective Association are the only two organized thus far in Quebec, is not by assessment based on the acreage holdings of the members.

The educational work carried on by the large body of rangers is particularly directed towards the settlers in the new districts, who, through careless burning of their cleared areas, have set on fire very large bodies of timber. The educational work coupled with vigorous prosecutions, has reduced the number of settler's fires to a striking extent year after year, so that this cause threatens finally to eliminate itself.

Mr. deCarteret strongly advocated the duplication of the St. Maurice system by the limit holders of the Upper Ottawa, and there are good prospects of this step being taken in the not distant future.

Cutting Down the Waste in the Forest Crop

Extracts from a paper delivered by Hon. W. R. Brown, President of the New Hampshire Forestry Commission, Managing Director of the Brown Corporation of La Tuque, P.Q., at the annual meeting of the Canadian Forestry Association, Chateau Laurier, on January 20.

That present methods of gathering the forest-crop in Canada are extremely wasteful has long been admitted by lumbermen and forest engineers alike. How this waste can be largely eliminated was the subject of an address at the afternoon session of the Canadian Forestry Association by Hon. W. R. Brown, President of the New Hampshire Forestry Commission, and Managing Director of The Brown Corporation of La Tuque, Quebec; Mr. Brown is also Assistant Treasurer of the Berlin Mills Company, of Berlin Mills, N.H., the largest corporation of its kind in the world. The points scored by the paper, therefore, were the result of practical expert experience.

Mr. Brown instances a tract of forest where both hard woods and soft woods were represented. A company having use only for the soft woods, might not find enough in the tract to make logging a paying venture. Their problem immediately would be to find a manufacturer who could use the rock maple for shoe lasts, a jobber to cut white ash for axe handles, a tannery to take the hemlock bark, soda or excelsior mills to use the poplar wood.

As an instance of cutting down waste on another woods operation, the speaker said that dynamite was now used on woods and obstructions in a river before driving commences, instead of on the logs during the process of a drive. This avoided a large breakage. Again, at the mills, narrow band saws are now being used in place of the wide circular saw, thus saving many cords of wood in a day's operations. In the up-to-date saw mill all spruce, fir and hemlock waste in sawing are converted into chips, and the remaining waste is converted into the boilers as fuel.

Mr. Brown spoke in detail of the up-to-date, economical methods of apportioning each wood to its best and most convenient use—cedar going to shingles and fence posts, chips to the sulphite plant, etc. The use of wood fibre for thousands of purposes was only in its infancy in America; it was now employed successfully for such off purposes as binned twine, and heavy rope, pipes for underground conduits.

The journey of the tree from the forest to the consumer now produced such widely different articles as chloroform and cloth, water pipe and lard, and yet the possibilities inherent in the ingredients of woods have hardly been scratched.

Fire Protection From the Private Timber Owners' Viewpoint

By ELLWOOD WILSON,
Forester, Laurentide Company, Limited, at Annual Meeting of Commission of Conservation.

Imagine a manufacturer with his whole stock of raw material for his lifetime piled up in one store house. Would he have it insured? Would automatic sprinklers be installed? Would he have a watchman or so on the premises? Would you if you were that manufacturer? Let me carry the parallel a little further, and ask what you would do if you knew that the destruction of your stock of raw material meant the destruction of the elements from which it could be reproduced and the supply for your children and grandchildren.

The forest is such a store-house and on it depends our most important industries, the stability and continuity of our water powers, the welfare of our agricultural population, the comfort of our daily lives. The private timberland owner is just as vitally interested in fire protection for his woodlands as any manufacturer. He might far better let his saw-mill, his sulphite plant, his paper-mill go uninsured and spend the money in protecting his forests. In a year or two he can rebuild his mill, he can easily borrow the money for the purpose and go on just as before. But he cannot reproduce his forests. After a bad fire the soil itself is partially or wholly destroyed, and if the fire has been of any extent the distance from the nearest source of seed may be too far away for natural reforestation to take place. Gentlemen, I have seen a tract of land of about ten square miles in extent which after fifty-six years has not a stick of merchantable timber on it, although covered with a growth of small birch and aspen, which is already past its prime, and not only is there no merchantable timber, but on this whole tract there are but 1,200 spruce and balsam trees not over 3 in. in diameter. The average percentage of burnt over land which is not reproducing in Quebec is 16 per cent, or about 10,597 square miles, and that on which reproduction has begun is 12.9 per

cent. These figures are based in actual surveys over a large area, and when applied to the areas under license rather under than over-state the amounts.

One of the most important questions to be considered by lumbermen for the protection of their forests is an efficient and economical method of slash disposal. Top-logging on operations where large amounts of timber are cut has proved in my experiments to be too expensive for the measure of protection it gives, and I think the only solution will be in brush piling and burning. The cost of this will be very little more than for simple logging, as the brush has to be piled in any case, and the protection will be absolute. In my experience the great majority of fires originate in slashings, and such fires cause the most damage and are the hardest to fight. If all woods operators are required to dispose of their slash it will be no hardship, as it will put all on the same basis, and the cost will be added to the finished product.

Would a farmer set fire to his wheat crop? What a question. Would he burn his seed wheat for years to come? Would he let his employes smoke if it endangered his crop? Would he allow hunters, fishermen and campers to freely travel over his land, making fires and scattering lighted tobacco from their pipes? Would he let his neighbor light bonfires where the fire would spread to his standing grain? He would not. Is he wiser, more practical, more hard-headed than the lumberman? Is he a keener business man? You will say no. But I can point to dozens of men whose bread and butter depend on their supply of raw material from the forest who do just such things and worse. I could multiply instances enough to make a volume.

Fire protection is not forestry, any more than it is logging or milling, but is the foundation, the absolute essential of all these. Without it they cannot exist. If we are not prepared to protect our forest, in Heaven's name, as practical men let us cut them down and use them up before they are burnt.

Fire protection is not a matter of cost, it must be done as cheaply as possible, but it must be done at any cost.

Remember in Canada we are not dealing with privately owned forests, but with government owned ones; they are the property of the people; every man, woman and child has a direct interest in them which extends to generations yet unborn. It is the duty of our public servants to see that they are protected, and that the licensees, who are but tenants, should not be allowed to shirk their responsibilities. Quebec is the only Province in eastern Canada to fully realize this, and its fine of \$5.00 per square mile for the licensee who fails to properly protect his limits has done much good. The average man does not realize how closely fire protection touches him. Every stock-holder of timber-owning companies should take an interest in fire-protection and see that his directors are taking care of their forests. Bond-holders are vitally interested, as a good part of their security may be wiped out in one large fire. Banks should not loan money on timber limits as collateral until they have investigated the fire prevention provided by the borrower. Don't trust any concern which does its own fire protection, unless it is done by a department which has no other duties. The timber lands departments have too many other duties, they have men they want to "take care of" from one season to the next, from the

end of the drive to the beginning of the fall out. They leave their patrol to cache-keepers, dam-keepers, and if there is any exploring, any repairing or other odd jobs, fire rangers are taken off to do them. Then, too, it runs up the logging cost and you all know what a terrible thing that is. Fire protection is a business by itself. It requires special knowledge, special training and special tools and methods, and the man who is skilled in logging or driving is not necessarily a good fire discoverer or fighter, rather the reverse. The same thing applies to railroad fire-fighting, which is usually left to section crews. These men have other work to do, and many of them do not take any interest in the fire protection work. It would pay the railways, and be far more efficient to have special fire patrolmen under a separate department head. The reduction of damage claims would pay for the expense many times over. Just as volunteer fire-fighting is out of date, so is amateur forest fire protection. A maintenance-of-way department grudges every cent spent on fire protection, and this attitude filters down to the section men.

All your work for conservation of our timber resources is wasted if we cannot conquer the fires. When I first went into the woods in Quebec, I was told one day that there were fires all along a river. "Why don't you put them out or prevent them," I asked. "Oh, you can't help having fires, it is impossible to put them out. We'll get rain pretty soon." But this attitude has changed, and the outlook is very hopeful. The first real attempt at fire protection was made in 1908, and now, after only eight years, we have 38.5 per cent of the licensed area of the Province under efficient co-operative protection, and this protection is becoming more and more efficient each year. Co-operative fire protection is not only more efficient, but it is much cheaper than individual protection. It is costing the larger members of the association only two-thirds of what it cost them to protect their own limits, and has wiped out the menace of the small limit-holder, who never used to protect his territory. If a man owns fifty square miles, it would require two men for six months with their outfit of canoe and tent and provisions at a minimum of \$500, to patrol it, or 1.5 cents per acre, and he gets much more efficient service for $\frac{1}{4}$ of a cent per acre.

The Quebec Department of Lands and Forests, under Hon. Mr. Allard, Mr. Dechene and Mr. Hall, deserve the highest praise for the work they have done in helping along this movement, showing thereby their broad-mindedness and their sense of responsibility for this great provincial asset placed in their care. In every way they have helped, often at political inconvenience to themselves from members of Parliament trying to save their constituents from punishment from infraction of the fire laws, and others who did not want to spend any money in protecting their limits. Mr. Allard is now at work on amendments to the Provincial fire laws, which will bring them up-to-date, and make them easier of enforcement, and do away with some abuses. The settler and the woodsman living so in the wilderness has naturally become ignorant of the law and contemptuous of it, but this condition is rapidly changing for the better.

Of the 70,000 square miles of timber limits under license, about 10,000 square miles are burnt, and have not yet commenced to reproduce themselves. At an average of 2,500 board feet per acre, this means a loss to the Government of \$15,000,000 in stumpage dues,

and for the 8,500 square miles reproducing, but which will not be ready to cut for 50 years, a large loss of revenue due to the interest for this long period. When licensees awake to the fact that they are paying the Government \$5.00 per square mile per annum for lands from which they cannot get a cut, or at least not for fifty years, and release these limits to the Government, the loss of revenue will amount to \$90,000 a year.

The agitation for better fire protection has also resulted in closer utilization. Burnt timber never used to be cut, but now the larger companies cut all the trees on burnt-over land, and the Government encourages this by a reduction in the stumpage dues, thus saving a great waste.

The great necessity is education of all classes of our people—the man in the street, the Government officials, members of Parliament, lumbermen, business men, woodsmen, farmers, settlers, and hunters, and above all the children, for they will be the men of the coming generation; and often the only way is to educate the children. The Church in this Province has done splendid work. His Eminence Cardinal Begin, Archbishop Bruchesi, and Monsignor Laflamme have for years sent special notices to all their parish priests to impress upon their people the necessity for care. The Department of Education, through their inspectors, have distributed leaflets to the schools in both languages, showing by pictures and by simple sentences the danger of forest fires. The reduction in the number of settlers' fires has been remarkable, and once the laws are enforced they will be a thing of the past. Members of Parliament are especially in need of instructions, for several times they have encouraged their constituents to fight arrest, and have influenced the magistrates, tried to use their influence at Quebec, and have even paid the fines themselves. The magistrates have been very remiss in their duty in some districts, discharging offenders in spite of clear evidence, and imposing fines of \$1.00, making thus a mockery of the law they are sworn to administer.

The railways, with one notable exception, have had a decided change of heart, and railway fires of any seriousness are rapidly becoming a thing of the past. The N. T. R. and I. C. R. are an exception to this, and are to-day a menace to the forests of the Province. Although the Honourable Minister of Railways and Canals promised to put into effect the same regulations as those in force on the railroads under the Railway Commission, and issued an order to that effect, his heads of Departments have not enforced his orders in Quebec, and have as yet made no provision for adequate protection. Since these lines run through country which will give them no other freight but timber, they should, even from a selfish standpoint, protect these sections. The Quebec Government has done all in its power to get this matter settled, but has had no satisfaction.

Workers in the woods are still in need of education, as ten per cent of the fires are still set by drivers. Woodlands Departments are getting more strict, and setting a fire is now in the most progressive companies cause for instant discharge of the man and punishment for the foreman.

The proposed amendments to the present law approved by Mr. Allard, and the better enforcement of the fire laws, will be a great step in advance. These changes will require permits to burn clearings at any

time during the summer, will require all persons called on by a fire ranger for help in extinguishing fires to respond under penalty of a fine, will fix minimum fines for infractions of the laws, so that a magistrate cannot make the law ridiculous by letting a man off without a one dollar fine, and will punish by imprisonment any deliberate setting of fire to get employment by extinguishing it.

There is a great need for better methods of slash disposal, and I believe that the only right method is the piling and burning of the branches and tops as soon as the trees are felled. A fire in a slashing is terribly destructive, and almost impossible to fight, and if there was no inflammable material of this kind, fires, except in unusually dry seasons, could never assume dangerous proportions, and could be easily extinguished.

The greatest advance in fire prevention methods will probably come in a year or two, through the use of aeroplanes or hydro-aeroplanes. One of these was used last summer by a volunteer fire-fighter, Mr. Vilas with great success. The initial cost is high, about \$7,500, or, with the duty, about \$10,000, but two men with one machine could patrol 10,000 square miles, and, being able to see a fire in its first stages, they should be able to extinguish it without calling for extra help.

We have still much ignorance and inertia to overcome, but the advances in the past few years have been varied, and if our people will but realize that there is a patriotism of peace as well as of war, and that slackers in peace time are as contemptible as in war, and when we shall realize our full duty as citizens and impress on Government officials that they are but public servants, and their offices are offices of trust, when we realize the words of Macauley, "None were for the party, but all were for the state," then we shall look back on forest fires with wonder at the civilization which tolerated them.

The Pine Blister Rust

By DR. H. T. FERNALD

Massachusetts State Nursery Inspector

Address given at 66th Annual Meeting, American Forestry Association.

The Pine Blister Rust as an American forestry problem was presented to the Association by Mr. H. T. Fernald, the Massachusetts State Nursery Inspector. The speaker stated that the disease is native to Europe where its normal host appears to be *Pinus cembra*, but that it has found the American white pine there an even more favorable plant upon which to live. He outlined the life history of this rust, explaining how it completes only one portion of its life in the pine, the remainder being completed in the leaves of currants or gooseberries, showing that if the latter can be kept at a distance from the pines the disease must in time die out. He then took up the history of its introduction into the United States and its present distribution, indicating that it is known to be present in half a dozen states and in Ontario. He stated that there were four possible ways by which the disease could be distributed—on nursery stock imported from Europe, on similar stock carried from one state to another, on stock infected but still remaining in nurseries, and on trees established in plantations before anything was known of the disease. The first of these sources has been eliminated

by forbidding the importation of five-leaved pines from Europe. The second source of danger is practically non-existent, as the nursery inspectors of each state are carefully watching all pines in the nurseries, and the same is true of the third source of danger. The real opportunity at the present time, for the spread of the disease, is from plantations where it has become established and where the presence nearby of currants or gooseberries renders it possible for the disease to spread from year to year.

The speaker then took up the question of how great a menace to forests and the reforestation movement with pine this disease might prove to be, and stated that it had not been present in this country for a sufficiently long time to provide conclusive evidence. He cited European views on the subject, however, which indicates that it gives every promise of being one of the most serious menaces to the five-leaved pines of this country which has yet been met with, and in closing urged that the situation be not neglected, but that all possible steps be taken to eradicate the disease while this was yet possible. It is already an interstate proposition, and a subject for congressional consideration, and in co-operation with state action it would seem quite possible to protect the pines of this country from the destruction which the unchecked ravages of this disease would probably cause.

Resolutions, Committee of Forests, 1916, Commission of Conservation

The Committee of Forests submits the following suggestions:

1. The matter of regulating settlers' slash-burning operations should be taken up with the Governments of Ontario, Quebec and New Brunswick, along the lines discussed in the report of the Committee.

2. As in previous years, the extension of the Dominion forest reserve area should be urged upon the Government. It is noted that no new forest reserves have been established since June, 1914, although the necessary classifications have been completed, showing that there are large additional areas of non-agricultural lands suitable chiefly for forest purposes.

3. The bringing of the field service of the Dominion Forestry Branch under civil service regulations is absolutely essential to even an approach toward efficient and economical fire protection of Dominion lands. If it should appear that the New Civil Service Bill is not to be considered at the present session of Parliament, a strong effort should be made to have the necessary action as to the Forestry Branch taken by Order-in-Council. It is understood that this can be done as readily under existing legislation as under the proposed new bill.

4. The Government of New Brunswick should be congratulated on the proposed early beginning of the forest survey and classification of Crown Lands. The Commission of Conservation should co-operate in the technical aspects of this work to as great an extent as financial considerations will permit.

5. The Committee on Forests believe that the inventory of forest resources of the Dominion, so well begun in British Columbia, Saskatchewan, and Nova Scotia, should be continued, without interruption, in other provinces, even should it become necessary, in order to conserve funds, to slightly delay the publi-

cation of the British Columbia and Saskatchewan reports.

6. The adoption of resolutions by the Commission has proved ineffective or only partially effective, in past years, in connection with a number of matters of great importance to the conservation of our forest resources. The Committee feel that, instead of recommending the adoption of further resolutions along these same lines, it will be preferable to devote stronger personal efforts toward accomplishing the desired results, on the basis of representations previously made. Some of the matters in this category are as follows: reorganization of the respective fire-protective services, with a view to securing larger personnel and a closer degree of supervision over the work of the field staffs; slash disposal on logging operations and along railway lines; the encouragement of further organizations for the co-operative handling of fire protection work on timber lands; more adequate fire protection along Government railways; better fire protection on the Trent watershed, including, if possible, the establishment of a Dominion forest reserve under some arrangement between the Dominion Government and the Government of Ontario. It is to be hoped that the matter of fire protection on this watershed will be considered by Parliament, during the present session, in connection with the proposed discussion of means for the utilization of surplus water power from the Trent Canal, for the generation of electricity. The action suggested would tend toward the more complete conservation of both power and navigation.

CHANGES AT BATHURST.

Mr. A. G. McIntyre has resigned as manager of the Pulp and Paper Division of the Bathurst Lumber Company. Mr. J. H. Thickens succeeds Mr. McIntyre as manager.



MR. J. H. THICKENS,
The New Manager of the Bathurst Lumber Co.

Ottawa Notes

The increase in freight rates on news print from Eastern Ontario mills to various destinations in Eastern Canada, proposed to be put into effect by Canadian railroads, was opposed by the Canadian Press Association and others before the Railway Commission last week. The chief argument in opposition to the increase was that newspapers were already under too great a strain to be called upon to bear this extra burden of increased freight charges. The proposed rates would raise the price of news print by about 15 cents per ton.

That there will be no tariff changes on pulp and paper products and probably none of any kind was the information secured from an authoritative source here. Last year the tariff was increased by 5 per cent preferential, and 7½ per cent general and intermediate. There were some exceptions as regards pulp and paper products, news print worth less than 2¼ cents per pound, matrix paper for use in printing and books and magazines being exempted. This year, it is authoritatively understood, there will be no tariff changes though there may be direct taxation. As a consequence the budget speech will be late in Parliament this year.

A legislative measure up this session with which Canadian lumbermen and paper manufacturers are prominently associated is the move now being made for Dominion prohibition of the liquor traffic. The Dominion Alliance, working in conjunction with an Ottawa committee of manufacturers, is behind the movement. Messrs. J. R. Booth and George H. Millen are the pulp and paper manufacturers who are members of the Ottawa committee, and it includes the following lumbermen: James W. Hennessy, Hiram Robinson and Senator W. C. Edwards. This committee is pressing for the reform more as an economic measure particularly necessary while the war is on than as a question of ethics. At a meeting of the Dominion Alliance and members of Parliament held in the House of Commons last week Mr. J. R. Booth said a few words in support of prohibition, speaking from the standpoint of an employer of men, the address of the veteran lumberman and paper manufacturer being greeted with applause.

That the prohibition by Sweden of the export of sulphite pulp will greatly increase the value of the Canadian product is the opinion of the J. R. Booth Company of Ottawa, as regards the latest sensation in pulp and paper circles. To a firm like that of Booth, which owns its own raw material, the embargo will be nothing but a benefit, but on the other hand to Canadian manufacturers who have been depending on outside sources for their pulp it will cause considerable inconvenience. There is stated to be almost no Scandinavian pulp left in Canada, such small supplies as have been imported, amounting to about \$115,000 worth in 1915, having been snapped up long ago.

There was a reference to the embargo in Parliament on Monday when Hon. Rodolphe Lemieux drew the attention of the minister of marine to it, pointed out that it would be taken to supply ships for this purpose. Mr. Lemieux pointed out that the shipment of pulp had been greatly hindered in the past as was the case with other products, by the shortage of vessels. Hon. J. D. Hazen, minister of marine, stated in reply that the Government would use its every effort with the British Admiralty to obtain the release of commandeered vessels for the export of pulp as well as of other commodities.

Sweden's Embargo on Chemical Pulp---Its Effect in the United States

(By ROWLAND W. JOLLY.)
(Special to Pulp & Paper Magazine).

New York, January 25, 1916.

The embargo placed upon the exportation of chemical pulp by Sweden (not mechanical wood pulp as at first reported), was brought about, according to the Swedish Board of Trade, by the difficulty of importing into Sweden chemicals necessary for the manufacture of chemical pulp. Also that further exportations might cause a shortage of home requirements. The Board also states that the prohibition is not absolute, as licenses will be issued for such exportations as the Swedish Government approves of.

In the local trade this embargo was at first regarded in the nature of a reprisal directed against England for the seizure of parcel post packages en route to Sweden. The larger importers in this country, however, are of the opinion that the prohibition will in all probability have a far-reaching effect upon the American paper industry.

One of the leading pulp importers in this city freely discussed the situation with the representative of the Pulp and Paper Magazine. He stated that he was positive Sweden would try to avoid losing its American trade. "Sweden will undoubtedly endeavor to make some arrangements," he said, "by which chemical pulp can be shipped into this country under a license plan—it being understood, of course, that we would not resell the pulp to Great Britain or her allies."

When asked if this embargo would have any serious effects upon the American pulp market, the importer replied, "It most certainly will. Even if we could get pulp under these restrictions, England might be disposed to prevent the exportation of wood pulp from Canada, which is, as you know, is the most important source of our pulp supply."

How about England securing her supply of pulp from Canada, was another question put to the importer, to which he replied: "Ocean freight rates are so high that it would be very costly to import the pulp from the Dominion. However, should England be unable to secure her pulp supplies from other sources she would be forced to draw upon Canada irrespective of the cost. Should Canadian supplies be directed to the use of British paper manufacturers, mills in this country are bound to suffer severely, especially in view of the fact that a large portion of available supplies have already been sold to American manufacturers. For that reason I believe Great Britain will sooner or later begin to conserve Canadian supplies for her own uses. If she does do this she will be com-

pelled to place an embargo on shipments to the United States in order to prevent Canadian producers from fulfilling their contracts."

Another view on the present situation is given in the statement to the local newspapers by Hans Lagerlof, president of the Scandinavian-American Trading Company. Mr. Lagerlof recently returned from abroad. He says that the Swedish embargo on pulp importations suggested big possibilities. "I think that in view of the fact that Sweden is the largest producer of wood pulp in the world," he said, "the shutting off of her supplies would certainly effect the paper industry in this country. However, I do not believe that Sweden would want to keep for herself one of the chief articles of export, especially as she is in need of other classes of merchandise from foreign countries."

Mr. Lagerlof also believes that Sweden is likely to qualify the embargo to the extent of agreeing to permit the exportation of limited quantities of pulp to various countries on condition that these countries will agree to ship to Sweden such articles as she may need.

Continuing, Mr. Lagerlof said:

"The war situation has brought us to the ancient system of barter. Under the circumstances, it is quite likely that Sweden will undertake to make agreements to permit the shipment of a certain quantity of pulp to Spain, for instance, for exchange of olive oil, and agree to the exportation of a certain quantity to the United States in exchange for a specified quantity of cotton, etc.

"I am confident that Sweden desires to maintain friendly relations with the United States, and for that reason it is not likely that the Swedish Government will do anything that would seriously embarrass the American consumers. I, therefore, feel hopeful that arrangements will be perfected by which pulp will be exported to this country. At the same time it would not be surprising, if Sweden did this, if England on the plea of military necessity, seized some of the ships destined to this country."

The import statistics of the United States Government for the ten months ended October 31 have just been issued. Wood pulp to the amount of \$13,751,592, of which \$6,002,066 worth came from Canada and \$4,411,099 worth from Sweden, was brought into this country during the ten months of 1915 ended Oct. 31.

Following are the details and figures of these imports together with the figures for the same period of 1914:

				1915		1914	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Mechanically Ground...	Tons	FREE	121,886	\$ 1,940,241	149,020	\$ 2,410,980	
Mechanically Ground...	Tons	DUTY	.....	.....	.....	.....	.....
Chemical Unbleached...	Tons	FREE	234,702	8,975,016	233,853	8,851,938	
Chemical Unbleached...	Tons	DUTY	.....	.....	.....	.....	.....
Chemical Bleached...	Tons	FREE	54,669	2,836,335	92,465	4,809,062	
Chemical Bleached...	Tons	DUTY	.....	.....	.....	.....	.....
Total	Tons		411,257	\$13,751,592	475,338	\$16,071,980	

Imported from:

Germany	16,910	\$ 767,412
Norway	50,588	2,408,567
Sweden	118,488	4,411,099
Canada	221,106	6,002,266
Other countries	4,165	162,448

Another interesting matter in connection with the foregoing embargo on Swedish pulp is the impression that prevails in local quarters that Scandinavian mills have been showing a tendency to "lay down" on their contracts. Substantiation of this is contained in the following letter which was received by a local importer from Sundsvall den several weeks ago.

"Through the Svenska Cellulosaforeningen — the Swedish Cellulosa Association—we have recently heard that a great many buyers in France, England and other countries, have agreed to increase the prices for pulp bought on contracts, and this increase covers the producer for the loss, that he otherwise would have sustained on account of the high prices for coal, chemicals and timber, for producing pulp and other requisites occasioned solely through the war.

"To take up such a position is also quite in conformity with the Swedish law, which gives the sellers the right to cancel contracts in the event of the costs for producing any merchandise having increased to such an extent on account of the war; so that the increase in the cost of production becomes so considerable, that a fulfilment of deliveries contracted for before the war must be considered as ruinous.

"In confirmation of this, the Association has consulted such prominent lawyers as Professors of Law Koersner and Solicitor Huselius, both of Stockholm, who have both pronounced an opinion in favor of the above position.

"As far as we are concerned, we have, however, at the finish of the shipping season fulfilled all deliveries including 1915 under contracts closed by us before the war, although this has been attended with heavy losses.

"The only compensation that we have asked from the respective buyer is, that where contracts have been made on c. i. f. terms, the difference between the normal freight and freight during the war should be paid; and further on all contracts that the difference between the normal and the present rate of exchange should be paid by buyers to which request all our buyers have agreed. But it follows, of course, that we cannot, in order to please our customers, continue these ruinous deliveries any longer; the more so as we in fact are legally entitled to cancel the contracts.

"All our most serious exertions to obtain coal and chemicals for the winter requirements have been entirely fruitless.

"For coal cargoes bought in England on four different contracts the War Department has not acceded to our request for licenses, although we have repeatedly made urgent applications. Only last week, when it is too late, we at last got a license for a steamer, which, however, will not be of any use in view of our port being closed by ice. For Salt Cake we have also quite recently obtained a license, but the steamer chartered, which left Rotterdam on 5th inst. cannot call on account of the ice. The frost this Autumn has been unprecedented and this closed our port considerably earlier than usual, and although we specially chartered an ice-breaker to keep a fair-way open in the ice, a lighter loaded with our winter supply of chalk was forced to return after three weeks fruitless efforts on

its way with cargo. A lot of other requisities for the winter have, in addition, not been able to obtain. In a few words, the situation is at present so serious, that we must stop our mill at the beginning of the approaching year. There is, however, a slight possibility, during some time at least, of keeping part of the mill running, but only at most excessive costs. It is, for instance, proposed to unload the above mentioned Salt Cake cargo, which was brought f. o. b. at a price about 40 per cent higher than before the war, at a port more south.

"However, provided we are able to get railway trucks, we might possibly be able to forward the Salt Cake first to Umea, and from that place by horses. It is, however, delivered from the steamer in a loose state (not in hessians or barrels) and the loading and forwarding of 500 tons will thus be most difficult and expensive.

"After our stock of coal is consumed, we might possibly during some weeks avail ourselves of wood fuel, as we may be able to buy some quantity of split-wood from saw mills, from whence this wood has to be forwarded by horses.

"But, naturally, through such arrangements the costs of production will run up tremendously.

"Let us say, that the cost for producing our pulp, after such arrangements have been made, amounts to 150-160 Swedish Kronor per ton. At prices as per contracts closed we should, if running our mill in the above suggested way, become bankrupt before long; but at the present prices, at least Kronor 170-180 per ton, a continued carrying on the production could at least be maintained, provided one could obtain the last mentioned prices per f. o. w. We consequently are herewith compelled to ask you to kindly immediately inform the buyers with whom we have contracts closed through you, that, on account of what we have herein stated and also with reference to the Force Majeure clause in the contracts, we will not fulfill the contracts as long as the present exceptional conditions are in force. We accordingly shall thank you to acknowledge by wire the receipt of this letter."

THE SWEDISH EMBARGO.

The announcement that Sweden was about to place an embargo on pulp wood has aroused unusual interest not only among pulp and paper men throughout the country, but among newspaper publishers, exporters, and in Government circles. Interviews with leading paper men have appeared in a number of leading papers, some of which appear here, as well as those personally interviewed by the Pulp and Paper Magazine.

Mr. T. J. Stevenson, of the Riordon Paper Company, Montreal, says: "The reported embargo on wood pulp shipment by Sweden affected to-day is of serious importance to the wood pulp supply of Great Britain, France and the United States particularly. The effect in the United States is of most concern to Canada, which country will now be called upon for every ton of sulphite pulp that Canadian mills can produce. Prices will rule exceedingly high and the sources of supply will be inadequate to supply fully the United States market. Great Britain will be forced to import Canadian and United States newsprint in great quantities if this embargo remains effective.

Mr. J. N. Greenshield's of Wayagamack Pulp and Paper Co., says: "Failing Scandinavian supply, English and, in a lesser degree, American mills, must rely largely on Canadian pulp, thus giving an immediate stimulus to our pulp industry. An Imperial retaliatory tariff measure on paper would extend our market and result in greatly increased production in Canada."

Mr. I. J. Weldon, of the Provincial Paper Mills, said: "Canada produces about five per cent of the world's supply of pulp. So far as Canada is concerned the feeling of the pulp manufacturers in that the prevailing price should be kept intact as far as possible. At the present time the Canadian mills are running at capacity in order to take care of the trade on the North American continent."

"At the present Canada has all the orders that she can take care of, and I doubt if, under ordinary conditions and contracts, a hundred per cent was offered the Canadian mills would be in a position to fill additional contracts. I quite appreciate the fact that under the ruling of the Swedish Government Europe would be at the mercy of Canada and the United States, in which event the premium on paper would be almost unlimited."

Messrs. Price Bros. & Co., of Quebec, state: "Sweden's prohibition of the export of pulp is a blessing to Canada, and one in disguise to Britain. Evidently Sweden expects that Canada cannot secure immediate transportation for its supply. It is up to the British Government to see that transportation is provided. Canada to-day can take care of Britain's requirements, so far as pulp and paper are concerned, and will be glad to do so for all time, but the British Government, when seeking additional revenue will have to protect this trade against her enemies, and against neutral nations, like Sweden, also."

The manager of Messrs. E. B. Eddy Co., Hull, Que., expresses himself in this way: "Our opinion is that, as a result of Sweden's prohibition, this is the greatest opportunity Canada has ever had to boom the pulp and paper industry of the Dominion."

The Laurentide Co. of Grand Mere, Que., say: "Pulp and paper is one of the chief industries of Sweden. Great Britain will purchase materials from either Canada or the United States. This decree will have a more serious effect on Sweden than it will on Britain. Undoubtedly there will be an increase in the price for pulp and paper in England. From this Canada may benefit, providing that she can ship these commodities."

The reply of the Fort Frances Pulp and Paper Co., Fort Frances, Ont., was "Sweden's action in prohibiting the exportation of wood pulp to Great Britain should prove a great stimulus to the pulp industry of Canada. So long as the attitude of Sweden remains effective Canada will find a ready market for her pulp products at a profitable price but conservative policies should be pursued."

"Sweden is more dependent on Great Britain for pulp than Great Britain is dependent upon them," said Mr. E. B. Biggar, formerly associated with the Pulp and Paper Magazine. "Sweden will feel the pinch before Great Britain. Personally, I have no faith in the decree. I am under the impression that it is a bluff. I am rather inclined to think that the existing channels of export of pulp and paper to the United States can be speedily shifted to Great Britain if conditions warrant a rapid change."

"Under ordinary conditions Canada is shipping a lot of pulp to Great Britain. If Sweden is prepared to enforce the decree it opens up a big channel for Canada to build up a greater and better trade in the pulp industry than in the past. The whole fact of the matter is that Sweden will suffer ultimately, and I feel satisfied that the order will be rescinded within two weeks."

Mr. Biggar stated that he had the greatest faith in the position of Canada in the position in which she has been placed in supplying paper for the motherland, and that she would be equal to the occasion, if called upon to fulfill the contracts for British publications.

He added that he had placed no reliance upon German and Scandinavian tendencies, because conditions in Canada in the pulp trade warranted an immediate response if demanded by Great Britain.

WILL ONLY USE CANADIAN WOODS.

In order to encourage the use of Canadian hardwoods for interior decoration, Lord Shaughnessy has issued instructions to use nothing but Canadian forest products in the sleeping, parlor, dining and observation cars and in the offices and hotel buildings of the Canadian Pacific Railways.

This decision was made only after careful consideration and experiment. Lord Shaughnessy has samples of all Canadian hardwoods treated at the Angus Shops in Montreal, where selected specimens were tested with polishes, stains, etc., and the results showed that Canadian woods compared very favorably with imported varieties.

NEWSPAPERMEN PROTEST FREIGHT INCREASE.

Representatives of the Canadian Press Association have protested to the Railway Commission against the application of the railway companies for permission to increase freight rates east of Port Arthur, insofar as the increase will apply to news print paper. The proposed schedule would greatly increase the cost of paper.

J. E. Atkinson, Toronto Star, chairman of the paper committee of the Press Association; J. F. Mackay, of the Toronto Globe; P. D. Ross, of the Ottawa Journal; and W. E. Smallfield, of the Renfrew Mercury, presented the case for the newspapers, and W. C. Chisholm, counsel for the Grand Trunk, for the railways.

ONTARIO PAPER CO. EXPANDING.

The Ontario Paper Co. has deposited with the Minister of Public Works, Ottawa, and in the registry office at Tadoussac, a description of the site and the plans of a dock proposed to be built in the Gulf of St. Lawrence, extending south or southeasterly from an island containing about five acres of land lying south of the mainland, opposite a point between the western outlet of the Rocky river and the outlet to the east thereof.

THE MONTEITH PULP AND TIMBER CO.

The Monteith Pulp and Timber Company, with a capital of \$40,000, offered publicly a block of \$10,000 common stock, in August. The company has no bonds or preferred shares.

UNITED STATES NOTES

The annual convention of the American Pulp and Paper Association will be held as usual at the Waldorf Astoria, 24th St. and Fifth Ave., New York. This year the preliminary meetings will be held on Wednesday, February 16, while the general session will convene at 10 a.m., the following day. The usual closing banquet will be held Thursday night, February 17, at the hotel. Unusual interest is being manifest in the coming convention, and a large attendance is expected. The fact that the New division recently moved into separate offices, thereby separating to a certain extent from the general offices on 41st St., is leading to a rumor that there is liable to be another break in the association. It will be remembered that the Book division withdrew several years ago.

The plant of the Rex Paper Company at Kalamazoo, Mich., is rapidly nearing completion. Three carloads of the paper machine are now on their way to the city. Two of the engines have arrived, and workmen are now busy bricking in the big boilers.

Arthur H. Hill, vice-president of the Crocker-McElwain Company, paper manufacturers of Holyoke, Mass., announces the appointment of William H. Crow as sales manager. Mr. Crow will have charge of the sales and advertising of this company, and according to Mr. Crow, he later expects to take over the work of sales manager of the Chemical Paper Manufacturing Company, looking after the advertising end of that company also.

Fred M. Butts, formerly assistant superintendent of the Crocker division of the American Writing Paper Company at Holyoke, Mass., has been appointed the superintendent of the mill to succeed John Montgomery, who was made superintendent of the seven division mills of the company manufacturing coarse papers, January 1.

Announcement was made in New England during the past fortnight of the purchase of the Erving Mills and property at Erving, near Orange, Mass., by Coleman H. Waite, treasurer, and George I. Walker, superintendent of the Taylor-Logan Company Paper-makers. The new company will continue to specialize in the manufacture of thin papers, such as crepe papers, paper napkins, paper towels, and tissue papers, for which there is a constantly growing demand.

Employees of the beater and machine departments of the S. D. Warren & Co., paper mills at Westbrook, Me., have been granted an increase of wages amounting to about seven per cent. The mills are rushed to the limit, some of the departments working all night in order to catch up with orders.

At the annual meeting of the Wisconsin Pulp Wood Company held at Neenah, Wis., during the past fortnight, the following were elected as officers for the coming year: President, C. A. Babcock; Vice-presi-

dent, William L. Davis; treasurer, F. E. Ballister; secretary, George Mead.

The John Hoberg Paper Company, of Green Bay, Wis., has re-elected the following officers for the ensuing year: President, Frank H. Hoberg; vice-president, Mrs. Lastina Hoberg; secretary-treasurer, Henry Goethe. The three officers with the following comprise the board of directors, John, William and Anton Hoberg, and Mrs. James W. McNevins.

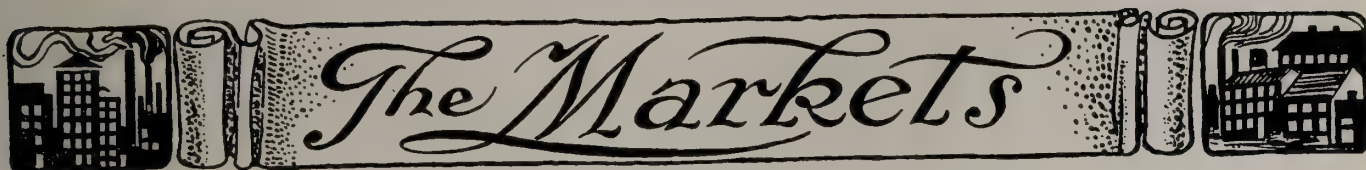
The Crocker-McElwain Company of Holyoke, Mass., has opened a Chicago branch office, which is in charge of Walter E. Perry. The location is in the new office building of the Continental and Commercial National Bank on La Salle street.

The annual convention of the Beaver Board Companies, held in Buffalo, N.Y., during the past fortnight, was one of the most successfully and largely attended ever held by the company. Salesmen from all sections of this country and Canada attended. The salesmen were the guests of President William F. MacGlashen at a dinner given at the Hotel Statler. Inspections were made at the Thorold, Ont., and Buffalo plants.

Announcement has just been made at Washington, D.C., that the census of the 1915 lumber production will be made by a co-operative arrangement between the Forest Service and the National Lumber Manufacturers' Association. It is expected, according to officials at the Service, that a preliminary statement can be issued on May 1, 1916, giving the approximate production of lumber in 1915 by states, and also for two or three of the most important species, reports on other species to follow as rapidly as possible. During the past ten years, the Bureau of Census has, except for 1913, done this work for the Forest Service, but it is unable to undertake the 1915 lumber census.

The Oswego River Paper Mills, Phoenix, N.Y., is having an automatic sprinkler system installed in its plant. Last Fall the three paper companies on the west side of the river joined forces and erected a tower and a 50,000 gallon storage tank, to furnish water as a secondary supply for sprinkler systems in the three mills. This improvement means a big reduction in insurance rates, and big saving to the companies.

The bondholders and creditors of the Battle Island Paper Company, of Fulton, N.Y., will probably receive a large dividend on their claims as the result of the sale of the company's Canadian timber lands. Judge Littier, of the Superior Court of Canada, has held that the mortgage of the bondholders is a first lien against the property. The decision was handed down a few days ago by the court. The litigation over the property covered several weeks. The property covers 71 square miles of valuable timber land, including about 40 square miles of freehold, which the mortgage does not cover. A roasting mill, valued at \$135,000, is also included in the property.



The Markets

CANADIAN MARKETS

Quotations f.o.b. Toronto, as per last issue, are:

Paper.

News (rolls) \$1.95 to \$2.05 at mill, in carload lots.
 News (sheets), \$2.15 to \$2.30 at mill, in carload lots.
 Book papers (ton lots), 4.25c. up.
 Book papers (carload), No. 3, 4.00c to 4.25c.
 Book papers (carload), No. 2, 4.50c.
 Book papers (ton lots), No. 2, 4.75c to 5.50c.
 Book papers (carload) No. 1, 5.00c to 5.50c.
 Book papers (ton lots), No. 1, 5.50c up.
 Sulphite bonds, 6½ to 8c.
 Writings, 4½c up.
 Grey Browns, \$2.35 to \$2.75.
 Fibre, \$3.35 to \$4.00.
 Manila, B., \$2.85 to \$3.50.
 Manila, No. 2, \$3.25 to \$3.75.
 Manila No. 1, \$3.35 to \$4.00.
 Unglazed Kraft, \$4.25 to \$5.25.
 Glazed Kraft, \$4.75 to \$5.50.

Pulp.

Ground wood pulp (at mill), \$16 to \$17.
 Ground wood \$19 to \$23, delivered.
 Sulphite (unbleached), \$50 to \$53, del. in Canada.
 Sulphite ((unbleached), \$50 to \$55, delivered in U.S.
 Sulphite (bleached) delivered, \$68 up.
 Sulphate, delivered, \$48 to \$50.

Paper Stock.

White envelope cuttings, \$2.10.
 No 1 soft white shavings, \$1.90.
 White blanks, \$1.00.
 No. 1 book stock, 95c.
 No. 2 book stock, 65c.
 Ordinary ledger stock, \$1.25.
 Heavy ledger stock, \$1.65.
 No. 1 Manila envelope cuttings, \$1.20.
 No. 1 print Manilas, 70c.
 Folded News, 45c.
 Over issues, 50c.
 No. 1 cleaned mixed paper, 37½c.
 Old white cotton, \$2.40.
 No. 1 white shirt cuttings, \$5.25.
 Black overall cuttings, \$1.60.
 Thirds, blues, \$1.60.
 Black linings, \$1.60.
 New light flannelettes, \$3.75.
 Ordinary satinets, \$1.60.
 Flock, \$1.70.
 Tailor rags, \$1.60.
 Blue overall cuttings, \$3.75.
 Manila rope, \$2.65.
 No. 1 burlap bagging, \$1.50.

Quotations f.o.b. Montreal are as follows:—

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$50 to \$60 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders; \$55 to \$60 per ton for small orders.
 No. 1 Book, 5¾c to 6c.
 No. 2 Book, S.C., \$4.75 in large quantities; \$4.85 to \$5.50 in small quantities.

No. 3 Book, M.F., \$4.25 in large quantities; \$4.50 in small quantities.

Writings, 5c to 7½c.

Sulphite Bond, 6½c to 8½c.

Writing Manila, 5c.

Cover Papers 6½ to 10c. per lb.

Colored Posters, 4½c to 5½c per lb.

Wrappings.

Grey Brown, per 100 lbs., car lots, \$2.25 net; 5 tons \$2.45; 2 tons, \$2.55; 1 ton, \$2.65; less \$2.75.
 B. Manila, car lots, \$2.85, less 5 per cent; 5 tons, \$2.95; 2 tons, \$3.05; 1 ton, \$3.15; less \$3.25.
 No. 2 Manila, car lots, \$3; 5 tons, \$3.20; 2 tons, \$3.30; 1 ton, \$3.40; less, \$3.50.
 No. 1 Manila, car lots, \$3.35; 5 tons, \$3.45; 2 tons, \$3.55; 1 ton, \$3.65; less \$3.75.
 Kraft, \$3.75 to \$5.00.
 Fibre, car lots, \$3.35; 5 tons, \$3.45; 2 tons, \$3.35; 1 ton, \$3.65; less \$3.75.
 Fibre, \$2.75 to \$3.50.
 Manila, B., \$2.50 to \$3.25.

Pulp.

Sulphite easy bleaching, \$43 to \$45 per ton.

News quality, \$39 to \$40 per ton.

Bleached sulphite, \$54 to \$59 per ton.

Ground wood, \$20 to \$23, delivered in United States.

Kraft Pulp, \$39 to \$40.

NEW YORK MARKETS.

New York, January 25, 1916—Ground wood has been showing to good advantage during the past few weeks and appears destined to enjoy considerable prosperity in the near future. Grinders report a growing inquiry and state that the volume of actual business is constantly increasing. The consumption of ground wood pulp is thought to be greater now than it has been in some time. The newsprint mills are operating to the fullest extent of their capacities, using up large quantities of pulp. As they are not now able to grind their own stock because of low water conditions, which are now prevailing, it compels them to seek the market for future supplies. It is understood that many manufacturers of paper are substituting, as far as they can, ground wood for chemical pulp. With the chemical pulp market rising steadily, it is likely that this tendency will increase with time. The inquiry for export continues heavy, but it is very difficult to take advantage of this business owing to the shortage of shipping facilities. Not in some time has the outlook for ground wood pulp been as encouraging nor as bright as it is at the present time.

Chemical pulps continue to soar with any apparent limitations. The announcement received last week that an embargo has been placed on the exportations of pulp from Sweden caused considerable stir in the market and forced it up a bit higher. Stocks here are so low that the absolute curtailment of foreign supplies of pulp would work much hardship to American manufacturers. On the spur of the moment, a number of importers, not knowing what the result of the embargo might be, withdrew their quotations. Latest reports, however, state that shipments will be allowed to leave Sweden on special

licence. This fact has somewhat allayed the general fears, although the market still remains very strong. Much speculation is heard regarding future supplies of Canadian pulp. It is feared that if England cannot get sufficient Swedist pulp, she may have to requisition the Canadian output. This, of course, is feared by those who have contracted for the product of the Dominion. However, it is believed that Sweden will continue to send considerable pulp to the United States. The imports of the past few weeks have been unusually small and it is understood that no shipments have yet left Sweden since the issuance of the embargo. It is understood that the mills need stock urgently and, while they inquire freely, they manifest an unwillingness to pay the high prices. However, there seems to be but one future for the market—higher prices. The increasing cost of coal and the various chemicals have made it much more expensive to produce pulp now than before the war. It is understood that several Scandinavian mills have instructed their domestic agents to cancel all old contracts because of the fact that they could not fulfill these obligations without becoming bankrupt. Already, it is said, foreign buyers, holding old contracts, have been compelled to pay current prices in order to get stock. Bleached sulphite is very firm and is being held almost generally at 5c. Bleaching powder, which is used in the manufacture of bleached sulphite, is still scarce and being quoted at nominal prices as high as 17c. for spot delivery. Strong sulphite is advancing and is being held as high as 3c. Easy bleaching is exceedingly firm and going higher. This is due largely to the fact that many of the consumers of bleached sulphite have tried to use the easy bleaching instead. However, there is not much of this pulp to be had. Krafts are growing worse all of the time. There is a big demand for this stock, but efforts to secure any large quantities for spot shipment are proving almost futile. Available stocks are exceedingly small—so much so that several mills have been compelled to curtail their productions on account of inability of getting supplies. It is expected that the next few weeks will show developments which will have considerable bearing on the future of the pulp market. Many people are inclined to believe that the worst is not yet in sight.

While cotton rags are not very active, they are holding remarkably firm. Dealers and packers throughout the city are convinced that the market must advance soon. It is known that the mills need rag stock and it is thought that they are keeping out of the market in the hope that a decline might take place any moment. However, such a thing seems almost impossible. We have always depended to a fairly large extent on our foreign supplies of rags to add to the domestic collections, in order to get enough stock to meet the general needs. There is an acute shortage of the better grades of rags such as linens. Roofing rags have become very active within the past month or so. At the present time, there is a big demand for roofing stock and prices have gone up higher than they were during last October when the flurry was in progress. It is expected that this roofing boom may last longer than any of the previous ones.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$16 to \$17, delivered.
Ground Wood, No. 2, \$14.50 to \$15.50, delivered.
Unbleached Sulphite, dom., 2.50c to 2.85c, delivered.
Easy bleaching impt., 2.75c to 3.10c, ex-dock, N.Y.

Bleached Sulphite, domestic, 3.25 to 3.75c., delivered.
Bleached Sulphite, impt., 4.00c to 5.00c, ex-dock, N.Y.
Unbleached Sulphite, impt., 2.40 to 3.00c., ex-dock., New York.

Bleached Sulphate, impt., 2.80c to 2.90c, ex-dock, N.Y.
Kraft Pulp, impt., 2.90 to 3.25c.

Paper.

News, Rolls, transient business, \$2.10 to \$2.25.
News, Sheets, \$2.20 to \$2.35, f.o.b.
News, Rolls, contract renewals, \$2.00 to \$2.10, f.o.b.
News, side runs, \$2.00 to \$2.15, f.o.b.
Book papers, car lots, S. & S.C., \$45 to \$46 f.o.b.
Writing paper, extra superfine, 13½c to 17c, del. east of Miss. River.
Writing paper, superfine, 11c to 13c, del. east Miss. R.
Writing paper, No. 1, fine, 9c, del. east Miss. River.
Writing paper, No. 2, fine, 8c, del. east Miss. River.
Writing paper, engine sized, 5c to 8c, east Miss. R.
Bond paper, 5c to 24c, delivered east of Miss. R.
Ledger paper, 5c to 25c, delivered east of Miss. R.
Linen paper, 8c to 18c, delivered east of Miss. River.
Manila jute, 4¾c to 5c, delivered.
Manila, wood, 2.50 to 3.35c., delivered.
Kraft, No. 1, (dom.) 3.75 to 5c, f.o.b., New York.
Kraft, No. 2, (dom.) 3.45 to 3.60c., f.o.b. New York.
Kraft, imported, 3.95c to 5c, ex dock, New York.
Boxboards, news, \$29.00 per ton, delivered.
Wood pulp board, \$40 to \$42.50 per ton, delivered.
Boxboards, straw, \$27.00 per ton, delivered.
Boxboards, chip, \$26.00 per ton delivered.
Tissue, fourdrinier, 50c. f.o.b. New York.
Tissue, white, cylinder, 47½ to 50c, f.o.b., New York.



200 H.P. Westinghouse Synchronous Motor
Driving an Air Compressor.

Westinghouse Synchronous Motors

are more efficient than any other type of drive.—The high power factor at which they can be run improves the operating characteristics of the entire power circuit.

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VANCOUVER

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Air Compressors

Blethen, Hugh R., New York
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Air Hoists

Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.

Bags

Smart-Woods Ltd., Montreal, Que.

Barkers

Bezner, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Waterous Engine Works Co. Ltd., Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Tippet Arthur P. & Co., Montreal, Can.

Belting

Can. Fairbanks-Morse Co., Ltd., Montreal, Canada
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Can.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones and Glasco, St. Nicholas Building, Montreal
Reddaway, F. & Co., Montreal, Can.

Belt Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio

Bleaching Powders

Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Can.
Winn & Holland, Montreal, Can.

Blowers

Sherbrooke Mach. Co., Sherbrooke, Que.

Boilers

Canadian Allis-Chalmers, Ltd., Toronto
Jenckes Machine Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Brass Wire Cloth, Fourdrinier Wires

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier Street, Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Cable Conveyors

The Jeffrey Mfg. Co. Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calendar Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Carriers

Northern Crane Works, Walkerville, Ont.

Chain Crane

Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Chain Blocks

Blethen, Hugh R., New York, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio

Chain Conveyors

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller)

Jones and Glasco, St. Nicholas Building, Montreal

Change Speed Gears

Jones and Glasco, St. Nicholas Building, Montreal

Chemicals, Colors, Etc.

Brunner, Mond & Co., Montreal, Can.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet A. P. & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay

China Clay Co., Manchester, England
Klipstein, A. & Co., St. Peter Street, Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Choppers

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Valley Iron Works, Appleton, Wis.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens

Bezner, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glasco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes

Blethen Hugh R., New York, N.Y.
Hamilton, Wm. Co., Ltd. Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes—Overhead Travelling

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Conveying Machinery

Caldwell, H. W. & Son Co., Chicago, Ill.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jeffrey Mfg. Co., Montreal, Can.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Process Engineers, Ltd., Montreal, Can.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures

Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford Ont
H. W. Caldwell & Son, Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Couplings

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glasco, St. Nicholas Building, Montreal
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Cut Gears

Jones and Glasco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont
H. W. Caldwell & Son Co., Chicago.

Cutters

Bertrams Ltd., Edidburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.

Cylinders

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford Ont.

Cylinder Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Johnson & Sons, C. H., St. Henry, Montreal, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining

Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Process Engineers, Ltd., Montreal, Can.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters

Pusey & Jones Company, Wilmington, Del.

Digester Gauges

Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms

Snell, Samuel, Co., Holyoke, Mass.

Dryers

Bertram Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Electric Lighting and Power Supplies
Forman, John, 248 Craig Street W., Montreal

Engines

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators

Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Scott, Ernest & Co., Fall River, Mass.

Exhausters

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery

Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Ltd., London, Eng.
Process Engineers Ltd., Montreal, Can.
Pusey & Jones Company, Wilmington, Del.

Exporters

Parsons Trading Co., New York, N.Y.

Felts

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Mass.

MILL SUPPLIES---Continued

- Washers, Ltd.** St. Hyacinthe, Can.
Forritt, Joseph & Sons, -Manchester, Eng.
Spencer, J. M. & Sons, Bury, England..
Tippett Arthur P & Co., Montreal, Can.
- Filters**
Chambers Ltd., 152 Bay Street, Toronto.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.
Pusey & Jones Company, Wilmington, Del.
- Friction Hoists**
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Pusey & Jones Company, Wilmington, Del.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Generators and Transformers**
Chambers Ltd., 152 Bay Street, Toronto.
Siemens Co., of Canada, Ltd., Montreal, Can.
- Grinders**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Hand Power**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Helicoid Conveyor**
H. W. Caldwell & Son Co., Chicago.
- Hoists**
Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works Limited, Walkerville, Ont.
- Hoists—Chain Electric and Pneumatic**
Blethen, Hugh R., New York, N.Y.
- Iron Pulleys**
H. W. Caldwell & Son Co., Chicago.
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Jordan Engines**
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.
- Knives**
The Waterous Engine Works Co., Limited, Brantford, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.
- Kollergangs**
Bertrams Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
- Laying Machines**
Chambers, Ltd., Toronto.
Collis & Sons, J., London, Eng.
- Locomotives, Electric, Storage Battery**
The Jeffrey Mfg. Co., Columbus, Ohio
- Paper Stock, Etc.**
Hough, R., London, England.
Pullan, E., 490 Adelaide Street, W., Toronto, Can.
- Paper and Pulp Machinery**
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Can.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Process Engineers, Ltd., Montreal, Canada.
Pusey-Jones Co., Wilmington, Del.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Walmsley, Chas. & Co., Bury, Eng.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
- Paper Machine Tachometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Paper Tester**
Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Stoke Newington, London, England.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pneumatic Thickeners**
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
- Presses**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Boomer & Boschert Press Co., Montreal, Can.
Chambers Ltd., 152 Bay Street, Toronto.
- Pneumatic Chain Blocks**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Press Rolls**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Process Engineers Limited, Montreal, Can.
- Pusey & Jones Company**, Wilmington, Del.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulp Stones**
Lombard & Co., Boston, Mass.
Stancliffe Estates Co., Ltd., Darley Dale, England.
- Pumps**
Bertrams Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Carthage, Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Pusey & Jones Company, Wilmington, Del.
Smart-Turner Machine Co., Hamilton, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Recording Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Recording Thermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Refiners**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Ma.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
- Rope, Cotton and Manila**
Jones and Glassco, St. Nicholas Building, Montreal
- Rope Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.
- Rosin Size**
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- Rosin Size Boilers and Dissolvers**
Process Engineers, Ltd., Montreal, Can.
- Rotary Sulphur Furnaces**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Runways—Hand operated**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Save-Alls**
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.
- Screen Plates**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Screens**
Bertrams Ltd., Edinburgh, Scotland.
Bezner, Albert, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Mach. Wks., Glens Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio
Jenckes Machine Co., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Tippet Arthur P. & Co., Montreal, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
- Shredders**
The Jeffrey Mfg. Co., Columbus, Ohio
- Slitters and Re-Winders**
Bertrams Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Moore & White Co., Philadelphia, Pa.
Pusey & Jones Company, Wilmington, Del.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Sprockets**
The Jeffrey Mfg. Co., Columbus, Ohio
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Split Pulleys—Wood and Steel**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Jeffrey Mfg. Co., Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Spiral Conveyor**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Straw Cutters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
- Straw Dusters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
- Strawboard Making Machines**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.

MILL SUPPLIES---Continued

Steam Regulator
Pickles, W. F., Buckland, Conn.

Steel Barrels
The Smart Turner Machine Co., Hamilton, Ont.

Steel Drums
The Smart Turner Machine Co., Hamilton, Ont.

Stuff Chests
The Watrous Engine Works Co., Limited Brantford, Ont.

Suction Couch
Process Engineers Ltd., Montreal, Can.

Sulphite Mill Equipment
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphur
Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Tachometers (Hand and Stationary)
Schaeffer & Budenberg, Brooklyn, N.Y.

Tanks
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.

Thermometers
Schaeffer & Budenberg, Brooklyn, N.Y.

Transmission Machinery
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Limited, Toronto.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones & Glasco, Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Transmission Rope
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Watrous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart Turner Machine Co., Ltd., Hamilton, Ont.

Trolleys
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turber Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Turbines
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc. New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
William Hamilton Company, Ltd., Peterborough, Ont.

Water Wheels
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines
Chambers, Ltd., Toronto.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Weatbye, P. F., Peterboro, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.

Waste
Hough, R., London, England.

Wet Machines
Bertrams Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co. Ltd., Brantford Ont.

Wood Preparing Machinery
Bezner, Albert, 299 Broadway, New York City

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Booth, J. R., Ottawa, Ont.
Bronson Co., Ltd., Ottawa, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Chicoutimi Pulp Co., Chicoutimi, Que.
Davy, James, Thorold, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
MacLaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Pulp Co., Campbellford, Ont.
Ontario Paper Company, Thorold, Ont.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Reed, A. E. & Co., (Nfld.), Ltd., Bishop's Falls, Nfld.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.

Kraft

Brompton Pulp & Paper Co., East Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
Spanish River Pulp and Paper Mills Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Eddy
Eddy, The E. B. Co., Ltd., Hull, P. Q.
Lincoln Paper Mills Co., Ltd., Merrittton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board
McArthur, Alex. & Co., Montreal.

Blotting
Canada Paper Co., Montreal.

Bons
Canada Paper Co., Ltd., Montreal.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho

Canada Paper Co., Ltd., Montreal
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal & Toronto.

Building and Sheathing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials

Don Valley Paper Co., Ltd. Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co. Ltd., Canada Life Building, Montreal, Que.

Carpet Lining

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper

Lazier Paper Mills, Ltd., Belleville,
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope

Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co. Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes

Hinde and Dauch Paper Co. of Canada, Toronto

Flour Sacks

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal.

Glass

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.

Kraft

Brompton Pulp & Paper Co. Ltd., East Angus, Que.
Dominion Paper Co. Ltd., Montreal, Que.
Dryden Timber and Power Co. Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board

Walker, J. R. & Co., Montreal, Que.

News

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd. Grand Falls, New
foundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin Crabtree Mills, Quebec
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co. Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co. Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland and Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde and Dauch Paper Co. of Canada, Toronto

Wood Board

Beaver Co. Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp Paper Co. Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal Que

Wrapping

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
See also Kraft.

Writing

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.



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Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
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Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill
Federal Paper Co., Ltd.
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Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.
- Quebec, Que.**
Andrews, F. H. & Son, 64 St. Paul.
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Alphabetical List of Advertisers

See Classified List on page 51

Unpaged advertisements appear in every other issue

A	
Abitibi Power & Paper Co.....	
Albertson, D. J.....	64
Ambursen Hydraulic Construc- tion Co., Ltd.....	11
Ayers, Ltd.....	60

B	
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd....	10
Bertrams, Ltd.....	7
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6

C	
Caldwell, H. W. & Son Co.....	18
Cameron Machine Co.....	63
Canadian Boomer and Boschert Press Co.	8
Canadian Fairbanks-Morse Co., Ltd.	10
Canada Paper Co., Limited.....	61
Canadian Westinghouse Company, Ltd	72
Capital Wire Cloth Mfg. Co. Ltd.	63
Carthage Machine Co.....	61
Chambers, Ltd.....	7
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	
Churchill & Sim.....	60
Crookes, Roberts & Co.....	13
Crossley T. L.....	65

D	
DeCew, J. A.....	65
Dean & Son.....	
Dodge Manufacturing Co., Ltd.....	2
Dominion Belting Co.....	63
Dominion Pulp Woods Limits...	54

E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	61
Emerson Mfg. Co.....	65

F	
Farrel Foundry & Machine Co.	
J. Ford & Company.....	62

G	
Glens Falls Machine Works	59

H	
Hamilton, Wm., Co., Ltd.....	14
Hardy, Geo. F.....	64
Harmon Machine Co.....	59
Hartig, Hugo.....	63
Hay Knife Co., Peter, Ltd.....	60
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	63
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg Co.....	
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H....	18
Johnson Chas.....	4
Jones, E. D. & Sons. Co.....	17
Jones & Glassco.....	

K	
Klipstein, A. & Co., Ltd.....	62

L	
Lauderburn, D. E.....	64
Lawrence Machine Co.....	65
Laurentide Co., Ltd.....	13
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M	
Marx, J & C.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15

N	
National Paper Co.....	16
Northern Crane Works Ltd.....	60
Norwood Engineering Co. of Can Ltd	66

O	
Ontario Pulp Wood Limits.	67
Ottawa Car Mfg. Co., Ltd.....	59

P	
Panzl Digester Lining Co.....	62
Paper Makers Chemical Co....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Prestons Digester Lining Co., Ltd.....	16
Process Engineers, Ltd.....	65
Provincial Paper Mills Co. Ltd....	9
Pullan, E.....	63
Pulp & Paper Trading Co.,....	63

R	
Rice, Barton & Fales Machine & Iron Co.....	2
Riordon Pulp & Paper Co., Ltd.	62
Roland Paper Co. Ltd.....	62

S	
Salomon & Co., Felix.....	63
Sandy Hill Iron & Brass Works	17
Schaeffer & Budenberg Mfg. Co.	
Schlick, Leo.....	64
Scott, Ernest & Co.....	
Sherbrooke Machinery Co., Ltd...	5
Smart Turner Machine Co.....	68
Smith, S Morgan Co.....	6
Snell, Samuel Co.....	60
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.	64

T	
Taylor, J. A.....	
Ticonderoga Machine Works....	6
Tippet, Arthur P. & Co.....	13

U	
Union Screen Plate Co. of Canada, Ltd.....	60
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd.....	63
Voith, J. M.....	12

W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd...	4
Waterous Engine Works Co., Ltd	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	60
Winn & Holland.....	60

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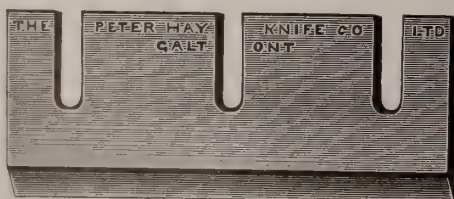
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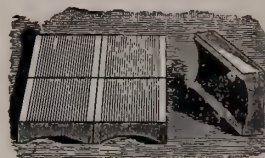
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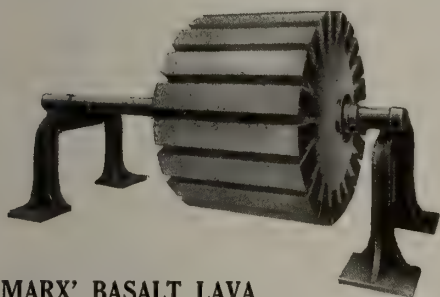
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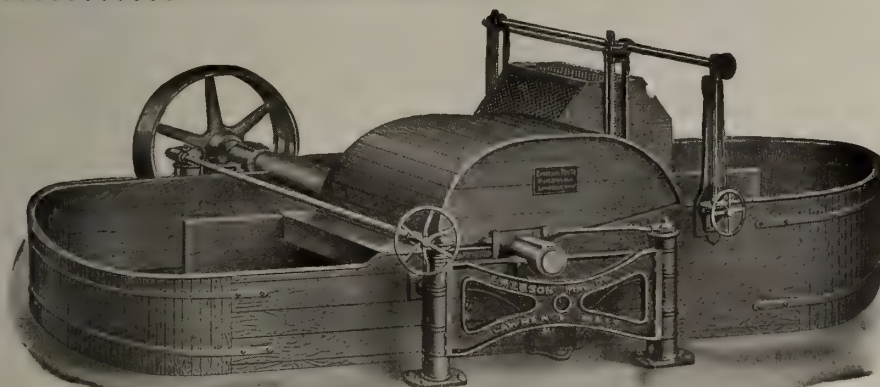
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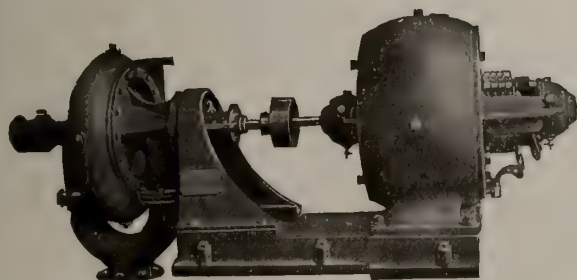
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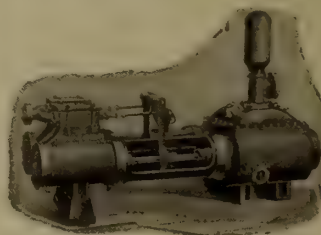


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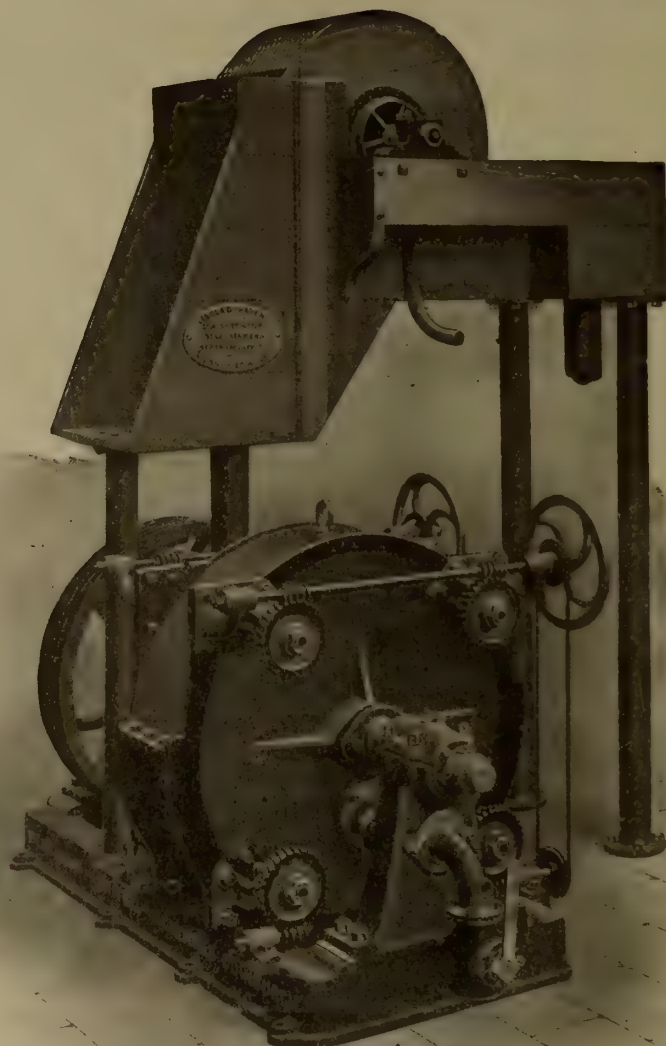
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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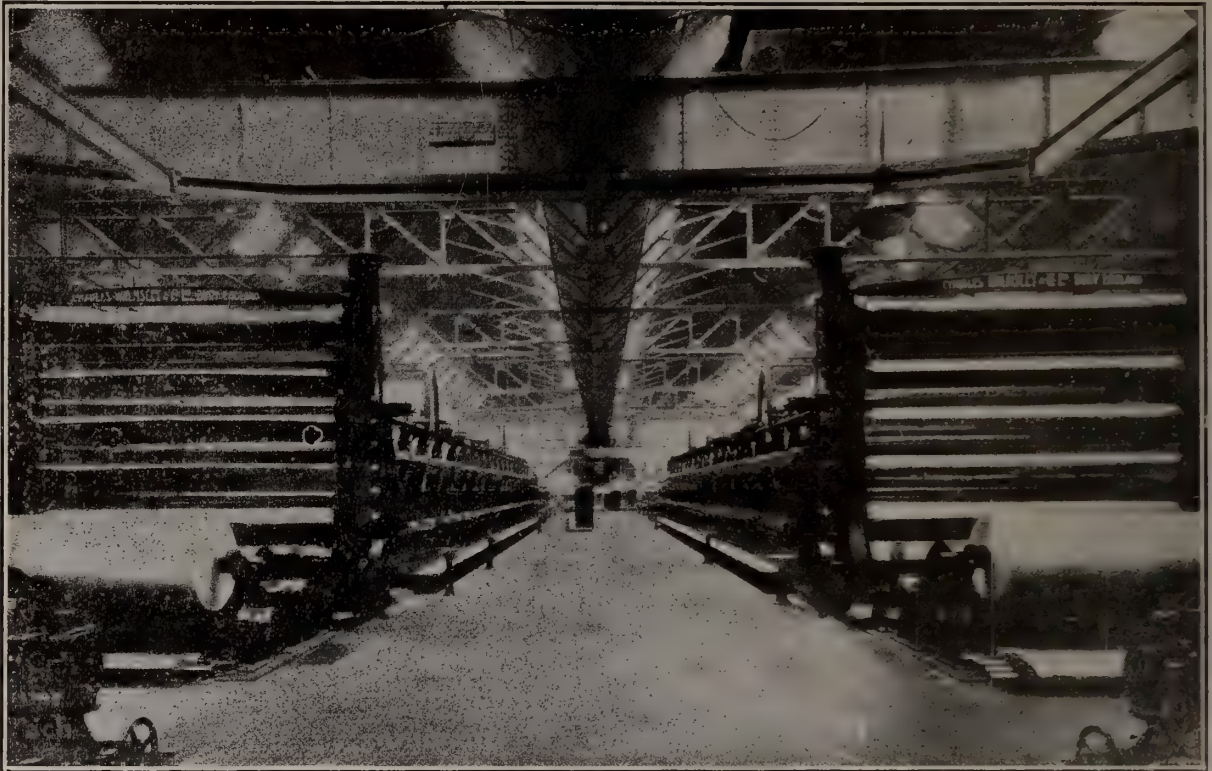
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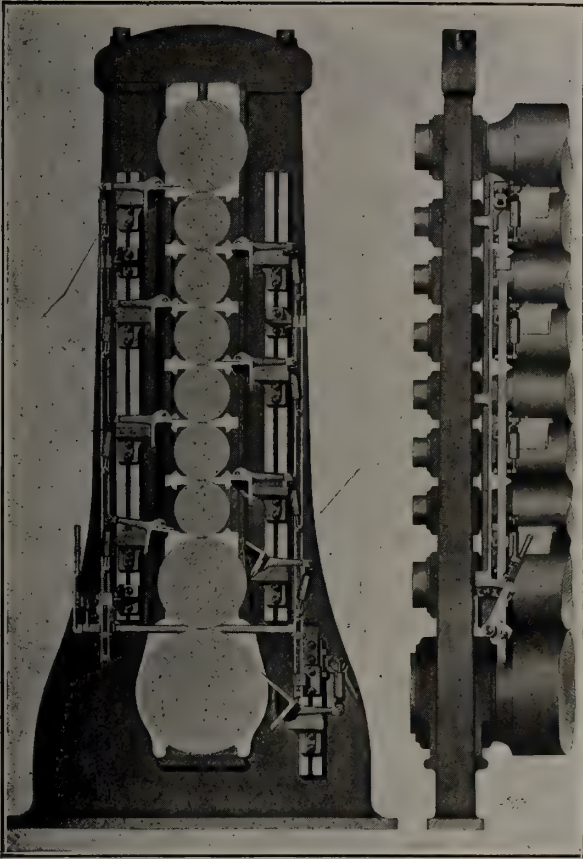
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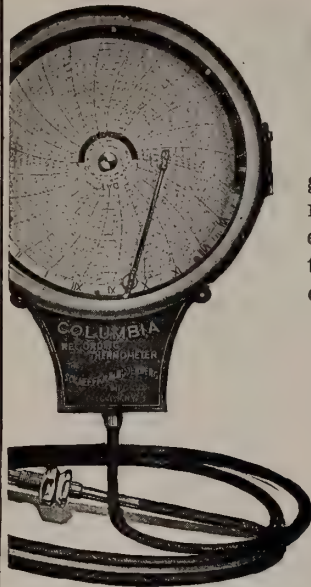
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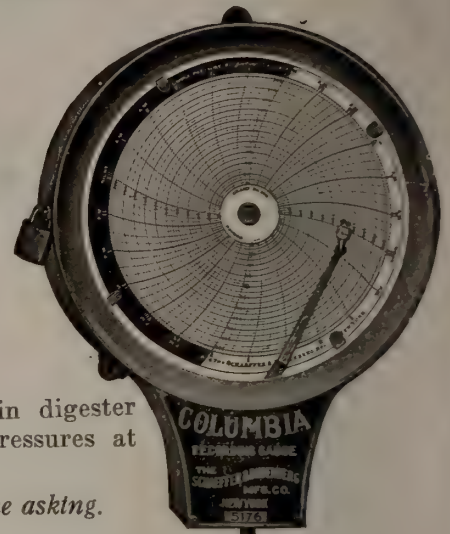
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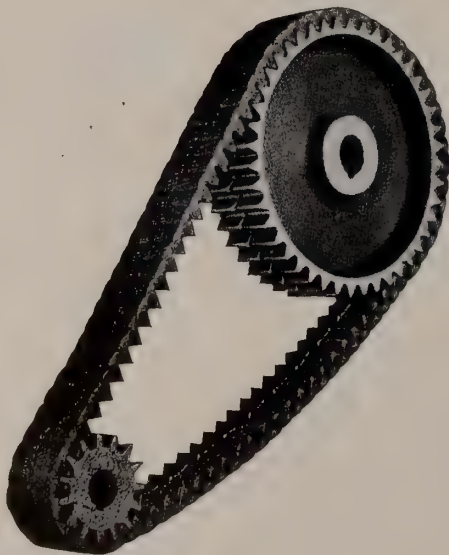
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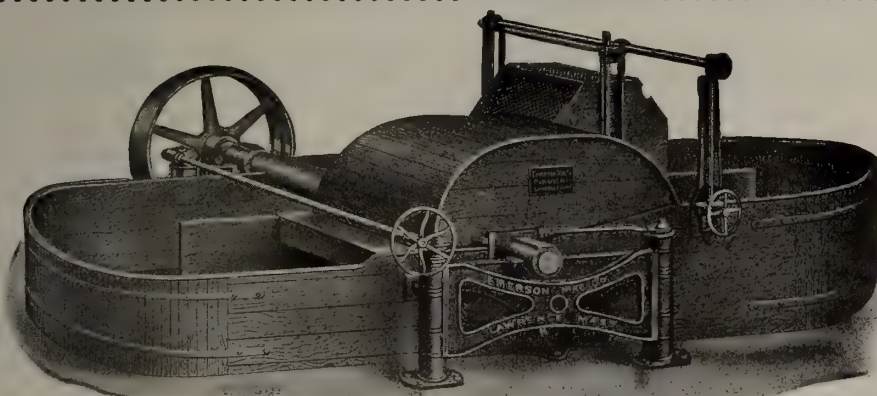
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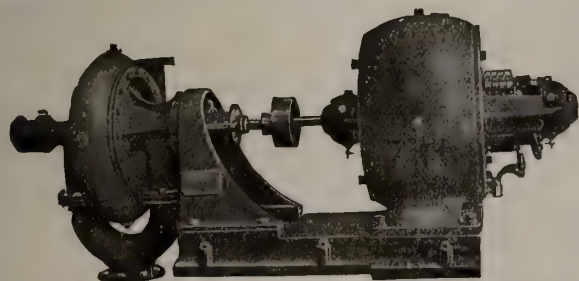
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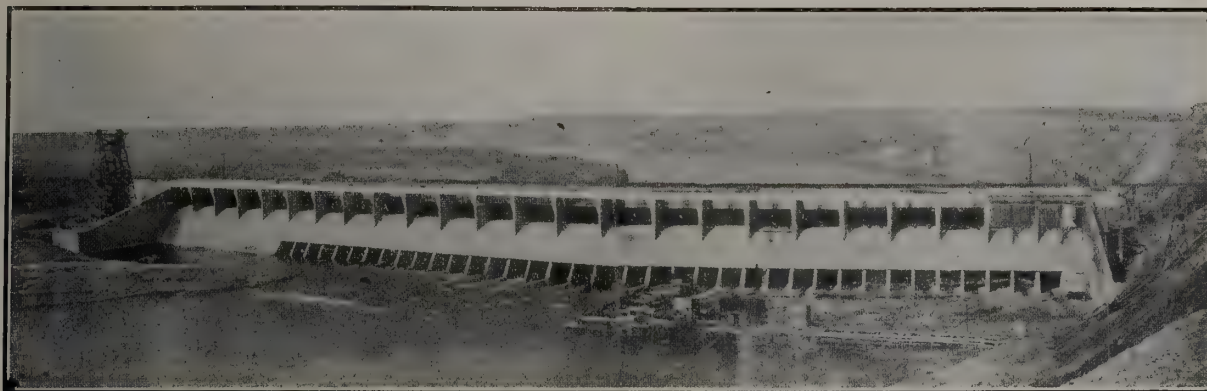
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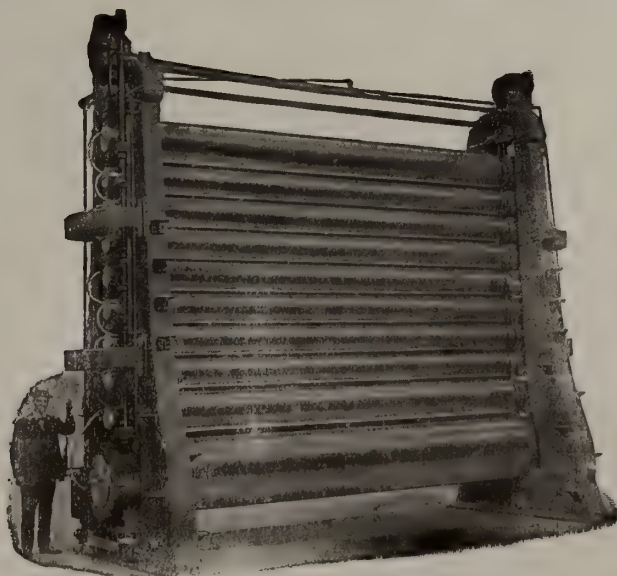
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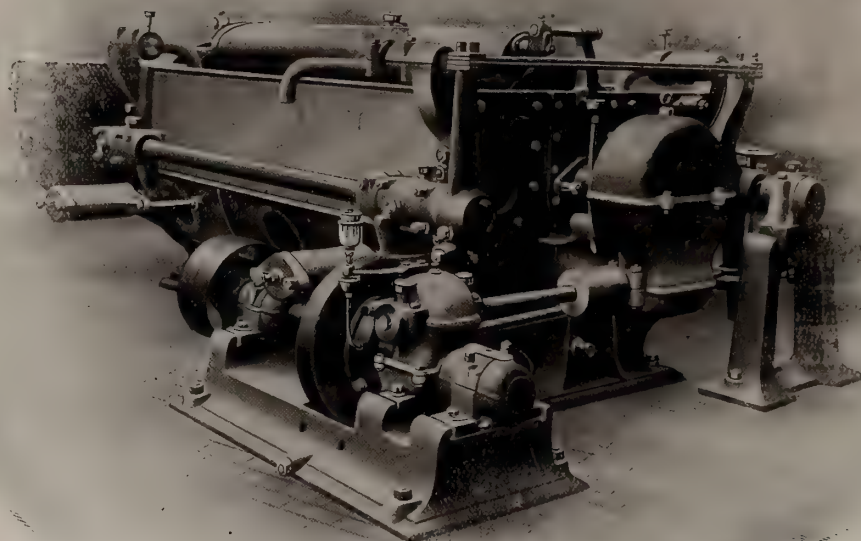
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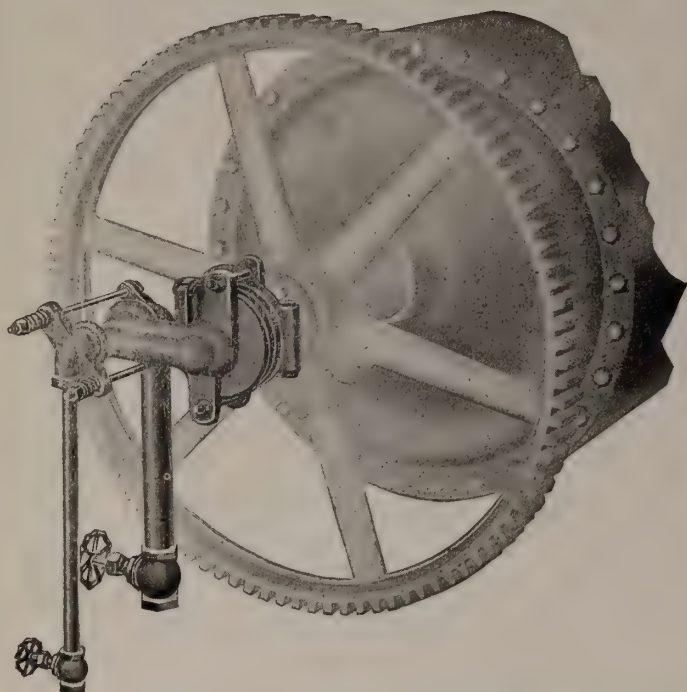
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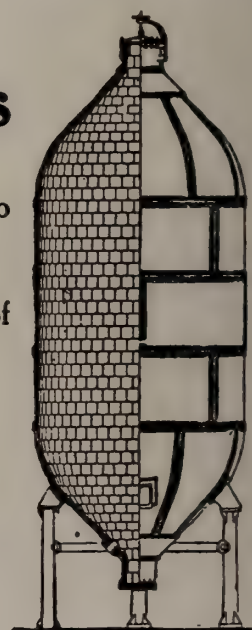
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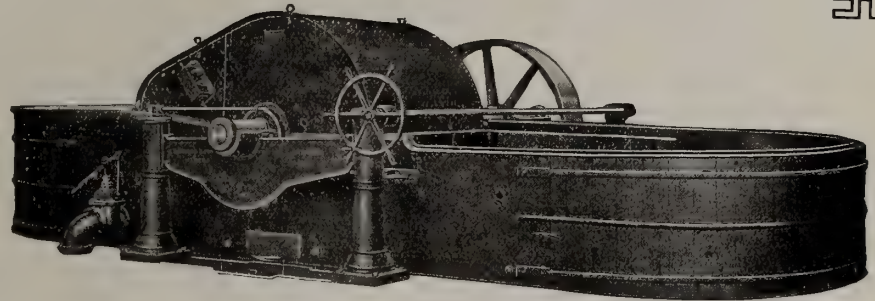
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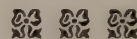
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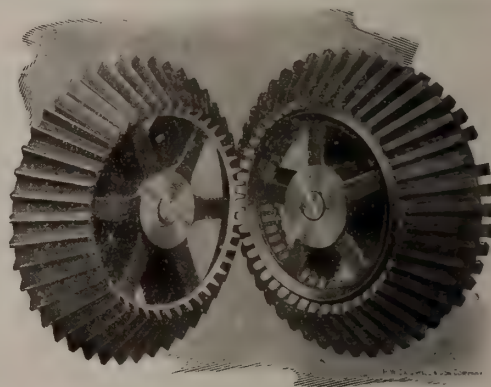
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*Official Journal of the Technical Section of
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VOL. XIII.

MONTREAL, FEBRUARY 15, 1916

No. 4

The Pulp and Paper Association

It would be hard to over-estimate what has been accomplished during the past year by the Pulp and Paper Association. Elsewhere in this issue the report of President I. H. Weldon is published in full. Modest-like, he does not tell all the achievements of the Association during the past year.

Mr. Weldon enumerates a number of things which they have been able to accomplish, such as a thorough investigation of the freight rate question, the matter of watching tariff legislation, the compiling of statistics and other matters of the utmost importance to the industry. Perhaps the greatest benefit is from the closer co-operation between the various companies engaged in this important industry.

It has been frequently stated that the new business slogan is "co-operation and not competition is the life of trade." This is being exemplified in thousands of cases. Business men engaged in the same industry find that they have much in common and can advance themselves and the industry more by co-operation than by ruinous and hurtful competition. A few cases will illustrate this. A change in the tariff affects every pulp and paper manufacturer. The protests of an individual manufacturer might have no effect, but the united protest of an association representing the whole industry is noted. A single manufacturer can do little fighting the railroads in regard to increased rates, but fifty or sixty manufacturers representing an industry speak with a voice which must be heeded. Further than that, the interchange of ideas, the utilization of the latest achievements of science, as well as the broad spirit of co-operation and toleration, have borne abundant fruit in connection with the pulp and paper industry.

The present is probably the most crucial time in the

history of the pulp and paper industry in Canada. Old channels of trade have been upset, while new markets and new opportunities await the enterprising manufacturers. The dislocation of the foreign dye market, the advance in technical knowledge and scientific discoveries as well as the new interest taken in conservation and the desire for a fuller utilization of our forest products, all adds to the importance of the pulp and paper industry. We are confident that our Canadian pulp and paper men will fully realize the importance of the situation and do everything possible to further the industry.

Nature vs. Chemists

If press reports from across the Border can be believed, the chemists and nature are engaged in a real controversy in which Marquis of Queensbury rules do not hold and hitting below the belt is permissible. For some time certain firms in the United States have been advertising a silk product which contains none of the raw material fabricated by the silk worm. The question is of interest to pulp, paper and lumber men as the artificial silk is manufactured very largely from wood cellulose. Chemists have made the artificial silk or "fibre silk" so nearly perfect that it takes an expert to tell it from the real article.

In other walks of life we have chemists making our existence more agreeable through their activities so there does not seem to be any reason why they should not give us a fibre silk, especially as the silk worms have no Union or eight hour day law in force. Already we have synthetic camphor, synthetic vanilla, synthetic oil of wintergreen, synthetic rubber and goodness knows what from our chemical laboratories. Perhaps after a time the by-products from our trees will be infinitely

more valuable than the lumber and paper in which their chief value now lies. In Germany they are making explosives from wood cellulose while in this Province we are turning out a species of lard or cooking compound made from trees which is said to be more valuable than the old-fashioned kind our mothers used to use in pastry making. Truly we live in a wonderful age, an age in which the chemist is playing a big part.

To Reduce Output of Blue Books

An effort is being made in Great Britain to reduce the amount now expended each year for the printing of blue books and other Government reports. The British tax payer is now assessed six million dollars annually for the publication of these reports.

As is well known, Great Britain is making very serious efforts to curtail expenditures not only in connection with Government affairs, but also in ordinary business channels and in the homes of the people. The Government cannot very well urge economy in private life and in ordinary business activities unless it shows a good example in the conduct of its own affairs. For this reason they are seriously considering the cutting down of the number and volume of their blue books and other departmental papers.

In some quarters a similar move is recommended in Canada. A reduction in the number of blue books would not hurt anyone except the paper manufacturers. Undoubtedly there are tons of blue books issued which are never read. These are distributed wholesale to people who have not the slightest interest in them and who do not make any use of the publications. While the cutting down of the number might eliminate some of the profits of the paper men who supply the Government with paper, we have not the slightest doubt but the loyal paper makers of the Dominion would be willing to make this sacrifice if it were deemed in the interest of the nation to save money in connection with our printing bills. Whether it is done in Canada or not, it is almost certain to take place in Great Britain especially in view of the scarcity of paper, resulting from the Swedish embargo.

The Swedish Situation

Newspaper publishers in Great Britain, Trade Commissioners and others interested in the pulp and paper situation are most hopeful of Canada being able to supply in a large measure the deficiency which will result from the Swedish embargo. They admit what is perfectly obvious to all who have studied the situation, namely that the prices will advance as a result of this embargo. In order to adapt themselves to the changed conditions, British publishers are reducing the size of their papers and endeavoring in every possible way to effect economies.

There is, however, a growing feeling in Great Britain that before very long Sweden will recognize the futility of "cutting off her nose to spite her face" and will lift the embargo. She is bound to suffer more from it than Great Britain. In the meantime however, Canadian manufacturers should make every possible effort to capture a share of the large business which Sweden previously transacted with Great Britain. The following table shows the volume and value of British imports from all countries and also from Sweden alone.

		<i>Total Imports</i>		
		1913	1914	1915
All wood pulp.	tons	977,000	990,000	954,000
do. do.		£4,617,000	£4,888,000	£5,314,000
Chemical wood				
pulp.	tons	411,000	433,000	402,000
do. do.		£3,312,000	£3,586,000	£3,760,000
Mechanical wood				
pulp	tons	565,000	557,000	551,000
do. do.		£1,305,000	£1,301,000	£1,553,000
<i>Imports from Sweden.</i>				
Chemical.	tons	243,000	282,000	276,000
do. do.		£1,967,000	£2,401,000	£2,648,000
Mechanical.	tons	124,000	108,000	135,000
do. do.		£280,000	£248,000	£389,000

The figures show that Sweden has been transacting a large business with Great Britain and as she is not a particularly wealthy country, she is not likely to long maintain her position of "splendid isolation." The pulp and paper industry is one of the most important of Sweden's industries and the British market is too valuable to permit the Swedes to ignore it very long. Roughly speaking, Great Britain takes half of Sweden's exports of pulp and paper. Such a customer is too valuable to be lost.

To Lessen Fire Losses

The Quebec Government is to be congratulated for its attitude in regard to the prevention of forest fires in this Province. Important changes in the provincial laws relating to the protection of forests from fires have been forecasted by the Honorable Jules Allard.

A recent deputation of timber limit owners, pulp and paper men and lumbermen waited on the Minister and asked him to pass more stringent laws in regard to the clearing of land by settlers. One of the requests made was that settlers be prohibited from setting clearing fires between April 1st and November 15th without first securing the written permission of a fire ranger. They also requested that the fine for omitting to secure such a permit be increased while forest rangers and other officials are to be given greater powers.

The loss to the country through forest fires caused by settlers clearing land is almost beyond computation and any efforts on the part of land owners, Governments or others to lessen this loss, is worthy of commendation.

Annual Meeting Canadian Pulp and Paper Association

THIRD ANNUAL GATHERING LARGEST ON RECORD

"The best ever" was the verdict of all who attended the Third Annual Meeting of the Canadian Pulp and Paper Association in the Ritz-Carlton Hotel on Thursday, February 10th. From beginning to end the meeting was one of good fellowship, hardwork and hearty co-operation among all who attended. Everything went perfectly smoothly, and the only thing in the nature of a hitch, was caused by the fact that about twenty-five more guests than expected turned up for the luncheon.

In point of numbers it was by far the most successful meeting yet held. Not only were many present from all parts of the country, but there were many new faces to greet the Chairmen of the various Sections when they assembled in their gatherings.

While the main section of the Association was meeting in one half of the Vice-Regal suite, the Technical Section under Dr. John S. Bates met in the other half to discuss groundwood problems. The business meeting of the main Association was held promptly at nine-thirty with President Weldon in the chair. The minutes of the last annual meeting having been taken as read.

President Weldon's address to the members was as follows:

To the Members of the Canadian Pulp and Paper Association.

Gentlemen:

Before mentioning the work of the Association and the progress of the industry, I wish to impress upon all and make perfectly clear the principles for which this Association stands. We are organized for co-operative efficiency in the manufacture of our product; organized effort in the further development of this industry in Canada; to encourage among the members an exchange of confidence that will establish co-operative competition; to know at all times the mutual sentiment of the industry on all matters of legislation that will enable us to intelligently advise with the Government at all times. We, as employers of labor and trustees of capital, require this co-operative protection to enable us to pay a fair wage, to assist in the necessary technical education, and to give such safety and comfort as is possible to our employees. As trustees of capital, the co-operation of all members of this Association is necessary to make for our shareholders a safe and profitable investment and sufficiently so to attract the additional capital necessary for the further development of the industry in Canada.

We are greatly indebted to the Department of the Interior, Dr. Roche and his Director of Forestry, Mr. R. H. Campbell, for establishing and equipping an experimental Laboratory here in Montreal, which is under the supervision of Dr. Bates. I am sure we will find this of great benefit and assistance in our work. I know we all appreciate the good work that Dr. Bates is doing.

During the past year, your Executive have not hesitated to spend their time attending meetings and mak-

ing special trips in the interests of this Association, but we have not, as yet, considered our finances sufficiently strong to allow the Association to bear this expense. On several occasions we have conferred with the Minister of Finance, Sir Thomas White, and his colleagues, on the matter of tariffs, and as a deputation we have furnished him with our views and given him the information which he desired. We have always received the most kindly consideration, and are of the opinion that no adverse tariffs affecting this industry will be consummated without the Department first considering our interests and consulting our judgment.



MR. J. H. A. ACER,
*Of the Laurentide Company, Limited, the newly elected
President of the Canadian Pulp and Paper
Association.*

With considerable pride I refer to the extremely valuable work which this Association has done in the fight against the proposed increase by the Eastern Freight Association. We held several executive meetings, the result of which only confirmed the fact that our Association alone would have to bear the brunt of this fight. We discovered that the Railroads had so influenced similar organizations that we could not obtain their hearty co-operation, although their interests and ours were identical. We obtained from our members the approximate tonnage affected by this increase, and

found that the increase would cost our industry \$209,000.00 yearly. The saving to us of such an enormous amount which, in our judgment, was being unfairly exacted, required the putting forth of the most strenuous effort. While your Executive was authorized at the last meeting to assess the members for the necessary financial assistance to successfully safeguard your interests, yet we felt that many members did not realize the seriousness of the matter, nor realize that to procure the necessary legal and expert tariff representation would involve us to the extent of from ten to fifteen thousand dollars. While your Executive was confronted with this apparently unsurmountable difficulty, the Laurentide Company came to our assistance and offered the services of their tariff expert, Mr. A. D. Huff. To the gracious generosity of the Laurentide Company we are all deeply indebted. We owe to Mr. Huff an unpayable obligation for the weeks of hard labor, both night and day, given to the compiling of necessary data, the preparation of facts and successful arguments which were necessary to offset the weighty opposition offered by the Railroads before the Railway Commission at their many sessions. The Railroads were represented by their directors, legal and tariff experts. I would, therefore, request you to authorize your Executive to recognize Mr. Huff's work in some substantial way.

The Pulp and Paper Industry in Canada during the past year has greatly increased its exports and diminished its imports, and compares most favorably with any of the leading industries in Canada. We are fortunate that this industry has not been affected by the present war, nor is it necessary for us to manufacture war supplies in order to keep our mills engaged.

The prospects for the future promise an unlimited sale for our product, both at home and abroad. Our manufacturing costs have increased, the supply of certain materials used in the manufacture of special grades is difficult to obtain, and we will doubtlessly experience most unusual conditions occasioned by the present war, but for the industry on the whole, we should entertain no fears for the future with our inestimable wealth of forests, our unlimited water powers, both of which largely represent the basis of the industry.

It is now a year since our last meeting, and we were then hopeful of seeing the termination of the war before this time. As citizens of Canada and the British Empire, we are filled with sorrow and regret that this terrible struggle continues, but our belief in the principles of democracy and our faith in the cause with which the British Empire has identified itself, strengthens our unflinching determination to see a satisfactory end, which must ensure lasting peace and the continuation of the free institutions for which the British Empire has always stood. We must, therefore, spare ungrudgingly in human lives, time and means in order to preserve our ideals of Justice and Right.

Following the Presidential address, the Section Chairmen delivered reports on the conditions with the various classes of products.

Mr. A. G. Campion, Chairman of the News Section, summed up the News situation tersely and comprehensively. He commented upon the comparatively wholesome situation of the News industry as compared with conditions up till about a year ago. He pointed out the fact that stocks are low and that the markets are good; that the total production has advanced during the year, and that the stocks on hand at the end of the year were about the same this year as last.

Commenting upon the distribution of product, Mr. Campion discussed the unusually high freights which

now exist and the difficulty of securing space for overseas deliveries. He expressed satisfaction that the diminution of color on account of the lack of dye stuffs had been accomplished with no serious argument between publisher and manufacturer.

The proposed increase of tonnage of about 210 tons per day, which is likely to come on the market in the near future through extensions by the Belgo-Canadian Company, the Donnacona Paper Company, and the St. Maurice Paper Company, Mr. Campion believed could be marketed along intelligent lines by authorities who are really in a position to understand the conditions surrounding markets and prices.

The success of the Association in presenting its case before the Board of Railway Commissioners at the time of the Eastern Freight Rates Case should be very highly appreciated by every member, said Mr. Campion. He urged that continual good work kept by the Association would result in great mutual advantages to all.

The report of the Secretary-Treasurer was read, outlining the routine work which had been done by the Executive and by the office of the Association. The financial statement showed that some loans had been paid off, and that a favorable balance remained to the credit of the Association.

In the election of officers which followed, Mr. J. H. A. Acer, of the Laurentide Company, Montreal, was unanimously elected President to succeed Mr. I. H. Weldon. Mr. C. Howard Smith was declared elected Vice-President by acclamation, succeeding Mr. Acer. The business meeting then adjourned, and the various Sections held their gatherings.

After these Section meetings it was reported that the following had been elected Chairmen and therefore members of the Executive:—

Chemical Pulp—Carl Riordon, Riordon Pulp and Paper Co., Montreal.

Mechanical Pulp—J. A. Bothwell, Brompton Pulp and Paper Co., East Angus, Que.

News—A. G. Campion, Belgo-Canadian Pulp and Paper Co., Montreal.

Board—John F. Taylor, E. B. Eddy Co., Hull, Que.

Book and Writing—I. H. Weldon, Provincial Paper Mills Co., Ltd., Toronto.

Felt Paper—E. R. Pepin, The Montreal Paper Co., Portneuf, Que.

At 1.15 the guests gathered for luncheon, but it was found that so many more than had been expected were ready to participate in the function, that extra tables were necessary, and some time consumed.

At the head table were seated, in addition to Mr. J. H. A. Acer, the President-elect and Mr. I. H. Weldon, the retiring President, Mr. Frank L. Moore, President of the American Paper and Pulp Association, Mr. G. F. Steele, Secretary of the Newsprint Manufacturers' Association, Mr. R. H. Campbell, Dominion Director of Forestry, and Mr. A. D. Huff, the Laurentide Co., Montreal.

Following luncheon Mr. A. D. Huff, of the Laurentide Company, who handled the case of the Association before the Board of Railway Commissioners at the time of the Eastern Freight Rates enquiry delivered a very instructive address upon Freight Rate Problems.

Mr. Huff outlined in a general way the traffic movement of Canada and the construction which had been carried out to meet them. Pointing to the United States he reviewed the efforts which the railways had made before the Interstate Commerce Commission to have

freight rates advanced, and, upon their ultimate success, traced the influence to Canada.

Following a general increase in rates in the United States the Canadian railroads had made efforts to do the same in Canada. That this was entirely uncalled-for had been amply demonstrated by the good financial statements of the roads affected since the time of entering the petition for an increase.

Mr. Huff discussed the work which had been done by the Association in making representations to the Board of Railway Commissioners, and concluded with the hope that the co-operation which had been exhibited among members would be seen to have resulted in success when the final decision is handed down.

Following Mr. Huff's address, it was moved by Mr. Gundy, seconded by Mr. Riordon and unanimously carried: "That a vote of thanks be tendered to the Laurentide Company and to Mr. Huff for the services which they had rendered to the Association. This was carried with applause.

Mr. Acer brought up the question of an increased scale of fees for members of the Association in view of the expenses which would be incurred in the New Year on account of extension of operations. The recommendations which he brought forth were carried on the motion of Mr. Riordon, seconded by Mr. Smith.

Following luncheon many of those present took advantage of the kind offer of Superintendent J. S. Bates of the Forest Products Laboratories to see the experimental paper mill in operation.

At five o'clock Mr. A. G. Pounsford, Paper Expert to the Champion Fibre Co., Canton, North Carolina, who will shortly assume similar duties with the Ontario Papermakers' Association, delivered an address upon Safety Work, illustrated by two moving picture films. This address will be found on another page.

News-Print Paper Situation in 1915

By G. F. STEELE, Secretary, American News-print Manufacturers' Association.

Prolonged applause and cheers greeted Mr. G. F. Steele, Secretary of the Newsprint Manufacturers' Association, when he rose to address the gathering.

Mr. Steele first of all referred to Mr. Frank Moore as "The most useful and the most beloved man in the United States paper trade."

"Since I have come to Canada I have seen and heard many wonderful things," said Mr. Steele. "I have been enlightened by what I have seen. The troubles which we have in the United States, pale into insignificance when we consider the burdens under which Canada is bearing up." Mr. Steele joined with President Moore in his praise to the brave Canadians who are doing their duty for their country.

Passing to the work with which he has been identified in the past year or two, Mr. Steele delivered an introductory address along the following lines:—

It is startling when we realize that the growth of the great news-print manufacturing industry on the American Continent is practically covered by the short span of the life of men now engaged in active

work. Some of these men, although past middle age, are still vigorous and active, and as they look back over the history of their life's employment, it must be a matter of amazement to them to realize from what small beginnings this great industry has progressed.

The growth of this industry is no more miraculous nor amazing than the growth of many other industries on this continent in the last forty years. The history of some of these industries reads like a fable from "Arabian Nights." Particularly may be mentioned the wonderful growth of the newspaper publishing business during the last forty years. The enterprise and shrewdness displayed by the newspaper publishers in crowding the growth of their business has been simply phenomenal, and goes hand in hand naturally with the growth of the news-print paper business. If it were not for the production of cheap paper the issuance of great circulation would have been impossible. Revolutionary changes in process at the beginning of the period mentioned offered the possibility of the de-



MR. I. H. WELDON.

Retiring President Pulp and Paper Association.

velopment of a great industry enabling the struggling and impoverished newspaper publishers of that earlier era to afford the world that diffusion and spread of knowledge which has never been equalled in all the flight of time.

About the time that news-print paper began to be manufactured from wood pulp, an evolution in the methods of merchandising in this country also began. Prior to that time consumers had learned of bargains and other trades through the ordinary channels of intercourse and gossip, and it was about that time that the use of newspapers for advertising purposes began in its present great proportions, and which has developed through the subsequent years to such an extent as to lead to the publication of larger newspapers, and consequently the use of larger amounts of white paper. Consequently, the increased use of news-print has resulted largely from three chief causes. First, the revolution in the manufacture of news-print pa-

per by the substitution of wood pulp for more costly materials. Second, the evolution in the methods of merchandising, by which advertising came to stay, and remained in largely increasing volume as the years swept by, and third, the ability displayed by the newspaper publishers in bringing together the news of the day in such volume as to attract buyers, which has resulted in the publication of enormous and growing editions.

Shortly before the beginning of this period all news-print paper was made from rags or straw. It is not my purpose to-day to enter into a detailed description of the introduction of the manufacture of ground wood pulp, which furnished a raw material so much less in cost than the raw materials previously used that newspaper publishers were enabled to reduce the price of their publications in most instances from five cents to one cent per copy, at the same time through their great enterprise, increasing the size of their publications from 50 to 200 per cent, a record that has been rarely equalled by any industry during this period.

About the year 1872 the production of news-print paper on this continent amounted to approximately 130 tons a day. There were very few, if any, newspapers printed from rolls, and practically all of the important newspapers of that day used news-print paper in sheet form.

I have been told that the largest mill producing news-print paper on this continent at that time made somewhere in the neighborhood of 10 tons a day. In one of the mills now belonging to the International Paper Company, the largest machine making newsprint paper produced at that time as much as 2,800 pounds of paper in 24 hours, which was considered one of the great feats of the day.

The introduction of wood pulp as a raw material for the manufacture of news-print paper is due to that galaxy of able and progressive men—A. Pagenstecher, William A. Russell, W. S. Daniels, Warner Miller and Wellington Smith—most of whom have now gone to their long reward.

There were other giants in those days, and among the manufacturers who were at an early date identified with the industry may be mentioned Warren Curtis, A. M. Hastings, and his nephew, Arthur C. Hastings, A. D. Remington, George Marshall, W. H. Parsons, Chauncey Kilmer, J. A. Kimberlev, Sr., Charles B. Clark, Garrett Schenck, J. B. Hosford, H. M. Knowles, Frederick Parks, Hugh J. Chisholm, W. D. Russell, F. J. Weeks and Frank Gilbert, in the United States, and F. B. Eddy, in Canada.

How few of the newspaper readers of to-day realize what a great debt of gratitude they owe to these men, the pioneers in the manufacture of wood pulp paper?

A number of the men whose names have been mentioned above are still active in the industry controlling great and successful plants.

The increase in production at subsequent periods is approximately as follows:

1880— 400 tons daily.
1890— 653 tons daily.
1900—1,893 tons daily.
1905—3,040 tons daily.
1909—4,000 tons daily.
1915—6,000 tons daily.

When we consider that the business of the news-print mills on the continent is largely domestic business, as so small a proportion of the output is exported as to render it inconsequential, the increase in production becomes all the more striking.

During recent years the growth of the industry has been largely confined to Canada on account of the opportunity afforded by abundant natural resources, and the abolition of the United States duty on news-print paper. Considering the rapid growth of the industry it is fair to conclude that production will continue to increase in proportion to the growth of population on this continent.

The history of the news-print industry during the year 1915 is exceedingly interesting. Usually the newspaper publishers and the news-print manufacturers have profited in the past by unusual occurrences in the world's history. It used to be the case that the quadrennial election in the United States caused a large increase in the consumption of news-print paper, and those who are old in the business can remember the bright anticipations with which news-print manufacturers looked forward to "election year" as a great consuming year, but now the Metropolitan dailies have particularly become such great commercial institutions that a presidential year does not affect consumption as it formerly was affected.

Just prior to the breaking out of the present European war consumption had been curtailed principally on account of the bad business conditions in the United States, resulting in the loss of advertising, which made it necessary for the publishers to reduce the size of their papers.

At the commencement of the war, newspaper circulation increased all over the land, but brought with it a further paralysis of business, which simply added to the expense of the publisher, and a further loss of advertising, resulting in anything but a healthy condition in the newspaper publishing business.

This condition was equally as disastrous to the paper manufacturer, as fully 90 per cent of the newspapers were under contract, and while they were unable to accept deliveries to the extent of their normal consumption, the paper manufacturer was precluded from increasing his sales, and was thereby forced to curtailment in production.

Through the careful collection of statistics contributed by a great portion of the industry on this continent the producers of news-print paper realized promptly the situation which confronted them. It became quite apparent that no increased market could be built up, and that economy in operation and patience in marketing product were the watchwords of the day.

Early in May labor troubles made their appearance in several sections of the country, resulting in a forced curtailment amounting to several hundred tons per day, and notwithstanding the fact that the manufacturers made every effort to treat fairly with their employees, the strike was of a much longer duration than anyone had expected, with the result that the mills which were operating enjoyed a fair volume of business.

Improved business conditions, as evidenced by the large increase in Fall advertising, from about Septem-

ber 1st, as shown by the increased size of the individual newspaper and the increased circulation, brought about a decided increase in consumption, and in some sections of the country the increase was largely in excess of any similar period, resulting in the largest consumption at the latter end of 1915 than in any similar period in the history of the industry.

Owing to the difficulties under which the paper and pulp industry is laboring in Germany, France, the Scandinavian countries, and England, heavy demands have been made, and are now being made, on our manufacturers of news-print paper for shipment abroad.

The manufacturers, in addition to taking care of the decidedly increased domestic demand, as shown by the above figures, have been extremely active in developing foreign trade. The demand from abroad has increased very materially during the past year, and the outlook for increased foreign business is very encouraging.

In fact, for the past year our manufacturers have been supplying practically all the trade of the English colonies and South America. A good portion of this tonnage previously had been supplied from Scandinavian, German and English mills.

Should the war continue there is every reason to believe that the necessities of the publishers in European countries will be forced to come to us for a considerable portion of their supply throughout the coming year, but I am pleased to say that the home manufacturers are practically of one mind in their desire to supply home consumption first.

The outlook for 1916, counting on the continuance of the European war, appears to indicate a strong market, with every manufacturer preparing to the best of his ability to take care of legitimate domestic demand.

The year 1915 has not been a particularly good one in point of profits to the manufacturer of news-print paper, nor does it seem likely that the year 1916 will be much of an improvement on its predecessor. Although the volume of business will undoubtedly be large, manufacturers are likely to be confronted with a largely increased cost of raw materials and scarcity of labor. The use of coloring material at the present time is prohibited by the price demanded, and by the inability to get sufficient supplies. The coal situation as well as transportation costs will necessarily affect the cost of newsprint paper materially.

As is well known by those who are engaged in this industry, about 90 per cent of the annual production of news-print paper is sold on annual contracts, and as a large number of these contracts will not mature until the latter part of the year 1916, the manufacturer will not get an adequate return for his product in comparison with his increased costs of production until late in the year, and while it is in every way probable that all of the mills making this class of paper on the North American continent will have an ample quantity of business to keep all machines running full, it is to be regretted that the prices obtained will not give a proper profit on capital invested for reasons given above.

Safety First

By A. G. POUNSFORD

Address delivered before the Canadian Pulp and Paper Association, Montreal, February 10th, 1916.

The subject which I have chosen for this paper is "Safety First." This slogan was first adopted by The Chicago and Northwestern Railroad in the year 1910 to symbolize its definite and organized movement for the prevention of accidents to employees and patrons. It has now developed into a nation-wide expression known to the child as well as the executives of our largest corporations. As one travels from city to city and visits the various manufactories, he cannot be but amazed at the magnitude of this great reform. Sign boards everywhere advertise it and in that place, on the lapel of the coat, where once appeared the insignia of our sacred order, we are now wearing the emblem of "Safety First." It has even spread so far that rich



MR. HOWARD SMITH,
Of the Howard Smith Paper Company, elected Vice-President of the Canadian Pulp and Paper Association.

and poor alike, from coast to coast, are decorating the baby, as soon as born, with a SAFETY PIN.

It has the broadest meaning, however, to the man who has others in his employ. It helps him, it helps them, and right here a closer unity is established between definite expression of a campaign, the object of which is to protect the life and limb of all humanity. A great step has been gained when these two words are imbedded in the mind of both employer and employee.

What then fostered this idea and brought it to light, making it a vital part of any corporation, either industrial or public service? Humanitarianism, to be sure, on the one hand and good business—scientific management, if you please, on the other. Let us review it from a cold-blooded business standpoint.

Man is a God made machine, one whose mechanism is highly perfected and when operated under normal conditions and properly taken care of renders satisfactory service. However the patterns used in making each part were misplaced, not filed in their respective departments for future use, or else discarded. With this handicap the employer, who has a large number of these "machines" in service, after developing them and bringing them to a high degree of efficiency must, not only protect each "machine" but each part of each "machine." You cannot call up the nearest supply house and order in a barrel of arms and legs, assorted sizes, and supply the kind of a break down that occurs when a fellow gets tangled up in a 2 inch belt. When accidents of this nature occur you have lost a most valuable machine and its accompanying earning power.

Since every corporation must of necessity employ a number of the "mechanisms" referred to and since money cannot replace broken parts or restore them to their usefulness, the only avenue left open to the fair minded employer is to take steps to prevent injury in any form.

It is then that he finds out, possibly for the first time, that this "machine" which preforms its work in a routine manner, is equipped with a thinking apparatus which under favorable conditions may rival his own. In this day and time with the advent of automatic machines the ordinary workman's chances to think are materially reduced. The Safety First movement gives these men an opportunity to think on a subject which will permit cap the employer, who has a large number of these ployee may have learned his trade in the usual manner and reached the point where through a series of deft movements of the hands and fingers, he is classed as a skilled mechanic. No special effort, however, has been made in his course of apprenticeship to teach him the importance of looking out for his hands and preventing injury to them. Plenty of men, dependent on their eyesight for a livelihood, will thoughtlessly risk the loss of an eye, through failure to wear goggles, simply because those who went before never wore them and through good luck rather than good management maintained good eyesight until their death. But this was prior to the advent of Safety First and statistics are not obtainable to show how many of these old line mechanics really did lose eyes. The number of cases of broken goggles, through flying steel and concrete, etc., prove conclusively that this step toward safety was a wise one.

Statistics have proved without a doubt that a great majority of accidents are preventable. The attainment of a material reduction in same has fostered greater effort, greater gains and therein lies the secret of the Safety First Crusade. Here, working together, the employee comes to realize that his employer whom he has never really known, is a real human being, while the eyes of the latter are at least opened to the fact that Tom, Dick and Harry employed down at the mill are genuine humanitarians also—the kind of fellows that go around and call on the fellow who has been off duty on account of accident or sickness and pass the hat on pay day when they find a worthy fellow in distress. In the plant of the Champion Fibre Company you will find this spirit continually manifested and in my opinion it is an outgrowth of the campaign which we are carrying on.

The sequence is that employer and employee find themselves working together and each party finds that he has a new regard for the other. It is then that the work broadens for the employer feels that he has behind him

the loyal support of the best men on the payroll. A few words of commendation from his lips starts each man, no matter how small his interest at first, on renewed efforts and soon every employee together with the family he represents, falls in line in the army of those already interested in this movement.

For the benefit of the man whose heart has been misplaced and who objects to this work from a purely humanitarian standpoint, let us look for a moment to the financial side of this endeavor.

A trained mechanic, machine operator, or foreman necessarily has a large amount of money invested in his person in the form of education and training. His earnings are his dividends. To cut off these dividends through accidents renders the investment worthless on the stock market of industrial wage earners. He therefore naturally expects the corporation whose machinery caused such an accident to pay him an amount in proportion to his disability.

To insure the employee from failure of the employer to pay him a reasonable amount and to prevent long and unsatisfactory law suits, Compensation laws have been enacted to standardize the whole system of settling or injury to employees, an admirable method of obtaining justice in claim settlement, putting out of business the ambulance chaser or shyster lawyer, as they are often known, from reaping a large fee for pushing unjust claims.

Since compensation laws are in force and specified assessments are made upon all corporations, any methods which would tend to reduce this assessment should receive no opposition from the management or officials.

As was stated before a marked reduction in the number of accidents occurring can be effected through organized effort, and accompanying this will be a reduction in the money required by the board.

Hence then is a definite financial gain which a corporation can go after.

Not only will there be a reduction in the amount of money to be paid for compensation claims but accompanying this will be a marked gain in efficiency among employees due to cleanliness and order and the betterment of working conditions, items which are allied with the accident prevention work.

I have mentioned the reasons for starting a campaign for "Safety First" mainly because I want to impress you with the fact that it is absolutely essential in this day and time to look more to the interests of those in your employ than it has been formerly.

Let us not turn to the methods of carrying on the work.

The first item in starting any Safety First Campaign is to guard the hazardous places in the mill, the most serious ones being attended to first. This guarding is a necessity for by this means the employer can show by tangible signs that he means business, and is willing to spend real money to accomplish his purpose. This matter of safeguarding is a continued effort reducing in volume as the work is carried out. It should not be gone at with a rush and a roar and then allowed to be shelved, as new hazards are continually cropping up in the most unexpected places. To explain I may recite a case which happened in our mill in the start of inspections. Between the time of our regular inspections the millwrights had lengthened a shaft to permit the installing of a new piece of machinery. The pulley was put on but later removed on account of a relocation of the machine, and without any thought the millwrights did not remove the extended shaft with the keyway in it. Later a man's clothing was caught by this shaft and a serious

accident was the result. This accident could have been prevented by guard if the condition has been noticed in time.

The following are some of the items which should be looked into first and are taken to a large extent from the Universal Safety Standards.

Standards for Guarding.

(a)—All gears wherever located, to be completely encased, or where that is impracticable to have a band guard provided with flanges extending inward beyond the root of the teeth. On large bevel gears running at slow speed an angle casting may be used at the point where two gears mesh, of sufficient size to prevent any portion of a man's body coming in contact with same.

(b)—Vertical and inclined belts including rope drives to be substantially guarded as follows:

(1)—If guard must be less than fifteen (15) inches from belt, with a complete enclosure to a height of six (6) feet.

(2)—If a guard can be placed with at least fifteen (15) inches clearance from the belt, with a standard railing at least three and one half (3½) feet high.

(C)—Horizontal belts including rope drives, to be substantially guarded as follows:

(1)—If upper part is less than six (6) feet from floor or level of a platform, to be completely enclosed on top sides or a standard railing at least fifteen (15) inches from belt be provided.

(2)—Where passage between upper and lower part of belt is necessary, standard railings to be provided and a substantial passageway, guarded on sides and top to be constructed. Otherwise space traversed by belt to be completely barred against passage.

(3)—Overhead belts with lower part seven (7) feet or less from floor or platform to be guarded against passage.

(4)—All overhead belts six (6) inches or more in width, traveling thirty (30) feet per second, or faster, which are located more than seven (7) feet from floor or platform level to be guarded underneath.

(D)—Horizontal shafting seven (7) feet or less from floor or platform level to be boxed in, enclosed in suitable manner, or guarded by standard railing.

(E)—Dead ends of shafts seven (7) feet or less from floor or platform level to be cut off wherever possible or otherwise to be encased so that part of clothing cannot come in contact with same.

(F)—All set screws to be of safety type. No square head set screws to be used unless absolutely essential and in such case they are to be enclosed.

(G)—All couplings and collars to be of safety type, i.e., with flanges so that bolt heads do not project beyond same.

(H)—Bearings on shafting to be self oiling type. Where cost of replacing old type would be prohibitive, suitable oiling platforms with stationary ladders should be provided.

(I)—Drives for cylinders, fourdrinier, presses, driers, calenders and reels should be protected by standard pipe railings.

(J)—All U. drains should be covered, likewise man-holes.

(K)—Where operation necessitates holes in floor same should be protected by hand railing made removable where necessary.

(L)—All digester blow valves should be equipped

with remote control mechanism to prevent blowing from out doors or in adjacent room.

(M)—Suitable locks should be provided for acid, steam and chemical line on digester and also steam and water inlets to boilers, to be used by men entering any shell to lock valves.

(N)—Substantial ladders should be provided with non slip metal feet on same.

(O)—Danger signs to be posted calling attention to any particular hazard.

(P)—Suitable exits should be provided from digester, blow pit and boiler rooms to permit escape at each end of the building.

The above are simply to suggest some of the things to get busy on.

On the face of it, it would seem that after protecting the hazardous places you could look for a marked reduction in accidents. If the guarding of machinery is the only step you take you must not be surprised to find them still continuing and your money spent, not bringing results. This has been the experience of almost every corporation in the United States, in starting its safety work. So, in Canada, the work can be undertaken with a more definite knowledge of how to attack the problem.

Marked results were not noticed until the campaign took on the aspect of an educational one.

This education I might say does not start with the workman, but goes back to the management, following on down the line through superintendent, forman, gang boss and finally the workman. Only through enthusiasm on the part of the men higher up can the work get a good start. You must get into the game from the beginning and thereby transmit your enthusiasm to your subordinates.

The management should appoint an inspector who should preferably be a mechanical man and make it one of his definite duties to keep behind the Safety work. He should be also made secretary of the general safety committee. This general committee should be composed of one or more men from each district department of your plant. A meeting should be called of these men together with the superintendents, and a definite plan of campaign outlined, the authority of this committee should be clearly understood to all concerned. You should impress the committeemen with the fact that you are imposing special duties on them, which are as essential as any part of their work. Let them know that their appointment is made through their especial abilities and popularity among the men. The duties of this committee are as follows:

(1)—To have general charge of all safety work in the plant.

(2)—To make periodical inspections.

(3)—To gather all plant statistics and information.

(4)—To adopt rules for government of employees.

(5)—To outline and supervise the educational work.

(6)—To call meetings of their own accord.

(7)—To have the privilege of correcting other employees whom they see doing work in an unsafe manner.

The method of making inspections which has proved satisfactory in our plant was to appoint one member of this committee inspector. He makes inspections at definite intervals taking with him a different member of the committee on each inspection. A printed form is used to make their recommendations. The object of having two men make an inspection is to enable them to exchange ideas for the new man undoubtedly notices points of danger which might be passed by the inspector. On this inspection all items noted on the previous in-

spection are checked up, and, if same have not been completed as ordered, a second or third report is made as the case may be. These reports after being put in proper shape are read and discussed at a meeting of the general committee. They are then sent to the general manager or other official as the case may be for final approval. Afterwards they are sent to the superintendents of the departments interested for final completion of the work.

One of the main functions of this committee is to talk Safety First throughout the mill, letting the men know of the movement on foot and the reasons for same.

After the committee and superintendents have fallen in line and the work is progressing smoothly a meeting of all employees should be called. The plant manager should be in charge. He should impress the men that the officials are determined to stop accidents and that this may be accomplished through their co-operation. Make it clear that the Safety Game is not child's play but requires serious thought and attention. Let them know that any suggestions they may make will be gladly received and will not hinder them in advancement, but rather be to their credit. If a spirit of enthusiasm is present it will go a long way toward awakening the men to this new idea.

After the employees become generally interested in the work another form of committee should be instituted, namely The Workmans' Committee, or as we term them, Safety Squads. These men are appointed by the employees themselves through popular election. Each man is given a ballot and he is allowed to enter any names he desires. No influence should be brought to bear on this election from the officials, the men determining who is the best fitted for the work. These elections have fostered greater interest in the safety work than any other one method which we have adopted.

The Safety Squads are made up of three men in each department, one man from each shift and one man on the day shift only. Their duties are as follows:

- (1) To be on the lookout for dangerous practices and report same.
- (2) To report any dangerous place which they may see.
- (3) To see that all safety appliances and guards are maintained in proper condition.
- (4) To make a weekly inspection tour through their department, the time of same to be arranged with their general foreman.
- (5) To hand in weekly reports to the chairman of the General Committee embodying the progress made and suggestions for further betterment.

These men should be given some form of button or insignia to designate the position which they hold to the other men. The period of time for which these men hold office should not exceed three months. At the expiration of this time another election should be held and a new committee take up the work. By this means in time every man in the plant will have served on some committee.

The maintaining of interest in the work will be mainly up to the General Committee. This may be accomplished in numerous ways. As this can be done to a large extent through advertising, Bulletin Boards should be installed in every room. These boards should have the slogan of the campaign, namely Safety First painted in large letters at the top of same. The boards should be kept alive by continual change of material. Copies of plant rules should be permanently posted on the boards. The National Safety Council at Chicago has a bulletin service for use and information can be obtained through them that is hard to duplicate.

Where mills are so located that their Safety Committees can get together for discussions, Round Table meetings form an admirable means of exchanging views. A definite subject should be assigned for each meeting and papers prepared in advance by each mill committee.

Safety entertainments will maintain and foster interest in a manner hard to equal. At these meetings the wives should be present as well as the men. Moving picture films can be obtained at a small expense and afford pleasure as well as teaching valuable lessons.

Contests with various prizes for the winners have been adopted and stimulate the men to renewed effort. These can be inaugurated as follows:

- (1) For the best suggestions offered during a definite period.
- (2) For the best knowledge of First Aid to the Injured.
- (3) For the best bulletin for posting.
- (4) For the cleanest room or department.
- (5) For greatest improvement in the grounds of their home. There are many others, but the above have all been tried out with success.

During noonday on inclement days groups of men may be gathered together and an excellent opportunity is afforded to talk Safety and point out the hazards, which the men are continually coming in contact with and advise ways and means of protecting themselves.

To keep the Superintendent's interest awake Safety Luncheons can be made a weekly affair. These meetings give these executives a chance to talk Safety among themselves and are also an admirable means of cementing friendship and promoting good feeling among them.

Plant publications find a welcome place in the work of maintaining interest. I have here a number of copies of The Log, the publication of the employees of The Champion Fibre Company, which I will distribute among you later, being an example of what we call a good paper. You may judge for yourself.

Another important phase of the work may be termed Welfare. Some of the items falling under this head are as follows:

- (1) Where conditions and the size of the plant warrant same a Company Hospital or First Aid Room should be maintained. In any plant, no matter how small, First Aid Kits should be provided for the dressing of minor injuries. Infections are ever presenting themselves, and can be only guarded against by proper care at the time of injury.
- (2) By doctor's supervision of employees. The work of the Company Doctor does not only cover the dressing of wounds, but is also closely allied with the Employment Bureau. Examination should be made of all persons making application for employment. He should advise the department head for whom the man desires to work as to the fitness physically of the applicant for the position. He should also assist in readjustment of the misfits or men who are not suited for the work they are doing.

(3) The Visiting Nurse is now playing an important part in the Welfare Work. Her duties aside from the care of minor injuries are to look after the general health of the families of the workmen. She should prescribe simple home remedies to ward off various diseases and thus keep the men at work without lay off. She also follows up all men who are off longer than two days with a definite reason being given. Sanitation in the home and proper methods of keeping house also fall in her duties.

(4) Mutual Benefit Associations should be formed as these give the men a method of support during periods of illness. This form of organization can be made self-

supporting and should not cost the company anything after it once gets going. The Relief Association as it is known in our plant, is not only self-supporting, but pays dividends annually to its members.

I have tried in the foregoing to outline in a general way the essential points in any Safety First Campaign. There is one item, however, that I have not emphasized and that is "sticktoitiveness." There will be many drawbacks and opposition from unexpected sources, which you will have to contend with. The Human Element is a problem hard to deal with requiring tact and foresight. If you do not succeed in one line of attack discard it and start on another. Vary your methods until you strike one which is in proper accord with the men whom you wish to reach. It takes a long while to educate a child and you will find a lot of men who are not out of the infant class when it comes to realizing danger. It is necessary for them to put their finger on a hot stove to find out if it will burn. Therefore you must not be discouraged at initial failures for in the end persistence will win.

Some Valuable Conditions Affecting the Manufacture of Ground Wood

(By G. W. DICKSON, of The Laurentide Company, Grand'Mere, Quebec.)

In order to produce a Ground Wood stock suitable to the several kinds of paper into which Ground Wood enters largely, there are several ways in which the process may be varied to obtain the stock required. First, the kind of wood used effects strength, color and permanency of the paper. Second, grinding conditions, such as temperature and sharpness of the grindstones. Third, screening, the variations of which are much more limited.

Also, it must be remembered, that if above conditions are fulfilled for a satisfactory stock at one time, the results may vary largely if only one condition is varied. For instance—a certain condition of the grindstones may do excellently for steamed or river-driven wood, but it will be found entirely unsatisfactory for frozen wood in winter. Or again, the stone may be in good condition for large black spruce blocks, where it would simply tear young balsam blocks to pieces. Wherever there is a mixture of woods, or young wood and old wood ground together on the same stone there will be a lack of uniformity in the stock produced. In many mills it has not been found profitable to sort the wood and run certain grades on stones specially kept in condition for them. To a certain extent a lack of uniformity may not be prejudicial, for the fine stock and the coarse stock combine to give the surface and strength respectively desired in the paper.

The first variable mentioned was the wood. This may be drawn directly from the bush, generally in the winter, in which case it will be frozen and contain pitch. Of course, the wood is not actually ground in a frozen state. The friction on the hot grindstone probably heats the wood in contact with it and the heat penetrates the wood to a certain distance, and this thawing out keeps in advance of the grinding process.

The pitch will probably make its presence known on the screen plates. Another case to consider is the usual supply to mills in this part of the country in summer, namely, river-driven wood. It enters the water at the time of the spring freshets, a large portion of the bark is lost in its descent to the mills, and as the season ad-

vances, sun and warmer water separate the pitchy constituents. Thus, all summer the grinding process must gradually tend towards the treatment that would be given steamed wood. If river-driven wood is stored for winter use a third condition is met with, namely—frozen wood without pitch, or more correctly, a negligible quantity of pitch.

The age of the wood also gives us different grinding conditions—old, dry wood requiring a sharper stone than young wood or wet wood. Decay is sometimes met with, heart-rot, a reddish or orange discoloration commencing at the heart and working outwards towards the surface, generally found in balsam, and dry-rot which commences at the surface and works inwards. In either of these cases the fibre is gone and a fine powder is all that results from grinding. Parts thus affected are best removed in the wood mill as there is no strength in them, also the decayed particles are usually discolored and produce specks in the finished sheet.

Having referred to the various conditions that may be looked for in the wood itself, the variations in grinding may next be considered. Commerce by grinding wood on a stone that has just been turned up true with a surface as smooth as the nature of the stone permits and the stock will be very fine—fluff or flour stock. If this stone be sharpened, that is, its surface cut into a series of ridges, the character of the stock at once changes to a clean-cut fibre, generally coarse and short at first, but as the most prominent particles of the stone wear off the fibres produced become longer, finer and more uniform. This process of sharpening may be effected by any of the burrs on the market, but the stock, in each case, will show a marked resemblance for any one stone however treated. This leads us to the conclusion that it is the inherent "grit" of the stone that produces a stock characteristic of that stone. I do not think that the fact that a smooth stone produces flour stock is at variance with this theory. The ridges produced by sharpening act as canals for the ground fibre to pass off from the active surface of the stone, or carry them to the grinder pit, where they are washed off. On the smooth stone they are re-ground many times and so become a mere fluff before reaching the grinder pit. If the fibres, under these conditions, could be collected for a very small fraction of the revolution of the stone they would be found, probably, to be of normal dimensions. Practically, the ridges, formed by sharpening, perform this function of collecting the ground fibres for a very small part of the revolution and conveying them away from the active surface, where, otherwise, they would continue to be re-ground until they had passed beyond the pockets. Another peculiarity of a grindstone is to produce certain similarities of stock when very dull or very sharp. Flour stock is frequently noticeable in excess on a very sharp stone. This is probably due to a cutting action on the fibres, rather than an abrasive action.

Although a stone will produce a characteristic stock under different methods of sharpening, i.e., by burrs of different size and form of cut, objectionable features may be partly overcome by selection of a proper burr. But, if a stone be soft or coarse or non-uniform it will never make the satisfactory stock obtained from a uniform stone of a properly proportioned composition.

As to variations due to pressure and speed, the practical ranges available in mill operation are not large enough to show very definite results. When considering pressure, however, as it affects the stock, it is not the gauge pressure, but the unit pressure on the stone's surface that is exposed to the wood which will produce stock variations.

Temperature changes are more easily observed. By keeping the grinder pit full of cool water and the stock thin a hard stock is produced. Pit temperature will probably run 140 to 160 degrees Fahr. Now, if the water is checked the stock thickens up and becomes hotter. Raising the head-board increases this effect. In this way a soft stock will be produced, the pit temperature rising to 180 degrees Fahr. or more. On a lantern slide the hard stock shows comparatively straight, clean cut fibres, while the soft fibres have a distinctly curly appearance.

Variations due to screening are practically controlled by stock consistency. If stock is run comparatively thick only the fine fibres and flour stock are accepted. By adding water, generally re-water, for economic reasons, the stock is thinned and larger fibres are washed through the same screen plates. Thus, a stock of much



MR. ROY L. CAMPBELL,
Re-elected Secretary of the Canadian Pulp and Paper Association.

greater strength and coarseness is obtained when running a 25 per cent stock than when running a 45 per cent stock. In the former case there is about 21 lbs. dry stock per 1,000 gals. liquid and in the latter 38 lbs. per 1,000 gals.

Annual Meeting of the Technical Section

The annual meeting of the Technical Section of the Canadian Pulp and Paper Association was held in the Ritz-Carlton Hotel, Montreal, on Thursday morning, February 10th, 1916. The following assembled under the chairmanship of Dr. J. S. Bates:

J. S. Beveridge, Dryden Timber & Power Co., Ltd., Dryden, Ont.; A. O. Bowness, The E. B. Eddy Co., Ltd., Hull, Que.; O. F. Bryant, Forest Products Laboratories, Montreal; C. F. Buss, St. Lawrence Paper Mills, St. Catharines, Ont.; R. H. Campbell, Forestry Branch, Ottawa; Roy Campbell, Montreal; Geo. Challes Riordon Pulp & Paper Co., Ltd., Toronto; T. Linsey Crossley, J. T. Donald & Co., Montreal; Dan Daverin, Provincial Paper Mills Co., Ltd., Toronto; J. A. DeCew, Montreal; G. W. Dickson, Laurentide Co., Ltd., Grand Mere, Que.; Thomas Ford, Jos. Ford & Co., Portneuf, Que.; S. J. Frame, Toronto; R. W. Hovey, Forest Pro-

ducts Laboratories, Montreal; S. B. Johnsen, Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.; Bjarne Johnsen, Forest Products Laboratories, Montreal; R. M. Kenny, The Jas. MacLaren Co., Buckingham, Que.; J. L. McNicol, Forest Products Laboratories, Montreal; A. G. McIntyre, Matagamic Pulp & Paper Co.; Maurice Nelson, Belgo-Canadian Pulp & Paper Co., Ltd., Shawinigan Falls; A. G. Pounsford, The Champion Fibre Co., Canton, N.C.; O. A. Porritt, Montreal Box Board Co., Montreal; D. Sharon, The Jas. MacLaren Co., Buckingham, Que.; E. B. Slack, Riordon Pulp & Paper Co., Ltd., Hawkesbury, Ont.; H. S. Taylor, Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.; C. B. Thorne, Hawkesbury, Ont.; Sigmund Wang, Riordon Pulp & Paper Co., Ltd., Hawkesbury, Ont.; Chas. L. Waters, Price Bros. & Co., Ltd., Que.

The minutes of the meeting of November 18th were read and adopted.

The names of members as accepted by the Council to date were read.

In the election of officers, it was moved by Mr. Thorn, seconded by Mr. Crossley, "that the present Chairman continue in his office."—Carried.

It was moved by Mr. Crossley, seconded by Mr. Elwood Wilson: "That Mr. C. B. Thorne be elected Vice-Chairman."—Carried.

It having been decided that one councillor shall retire every year, nominations were received for the various councillors who shall retire at the end of three years, two years, and one year respectively.

It was moved by Mr. Thorne, seconded by Mr. Elwood Wilson, that: "Mr. G. W. Dickson be Councillor to act for three years."—Carried.

It was moved by Mr. Thorne, seconded by Mr. Crossley: "That Mr. Daverin be Councillor for two years."—Carried.

It was moved by Mr. Thorne, seconded by Mr. Crossley: "That Mr. H. S. Taylor be appointed Councillor for one year."—Carried.

Mr. O. F. Bryant reported for the Committee on Literature and Statistics, as follows:

We have considered it necessary to co-operate with the American Paper and Pulp Association, Technical Section, in order to carry out work successfully. The Committee has been in touch with the A. P. P. A., Technical Section, and has been assured that co-operation was desired. It is expected that at the next meeting of the A. P. P. A. Technical Section, the matter of abstracting journal and so forth would be taken up and ways and means devised. As soon as this is done, the two sections will probably arrange to have abstracting carried out and a suitable means of dividing the expense would be arrived at. The Committee hope to be able to report progress at the next meeting.

Mr. Crossley reported for the Committee on Technical Education as follows:

When your Committee reported on conditions and possible lines of action at the meeting held on Nov. 19th, 1915, three classes of individuals were spoken of and three lines of work were mentioned. These were:

- (a) Vocational Education, being work of a pioneer nature in the primary schools.
- (b) Work with men now employed in mills.
- (c) Work with students in Colleges and Universities.

At that meeting this Committee advised not taking further action with colleges for the present at least. Your Committee has since met and decided that the question of work in the schools is too wide for our present consideration.

We are brought naturally to a focus on work with the men in the mills. Your Committee gave this question careful attention and decided to write a letter to a number of representative men, asking their views on suggested means of raising the educational status of workers in mills.

We decided to consider especially what might be called the middle class of men. It is taken for granted that engineers, superintendents and managers are trained men, with trained minds, and that certain other workers will always belong to this class known as unskilled. Between these two classes, we find foremen, machine tenders, beatermen, size-makers, bleachers, finishers, cooks, acid-makers, grinders and others. On this class of men, then, it is decided to focus our efforts for the present. An improvement in the educational status of any considerable number of these men would be practically certain to result in an advance in quality, uniformity, safety, and earnings to the industry as a whole.

There are two difficulties in the way:

1st.—The apathy of the untrained men.

2nd.—The apathy of the trained man.

Your Committee has no hesitation in putting a "tu quoque" to this audience. Letters have been sent, as before mentioned, to a number of leading technical men in the industry, making suggestions and inviting discussion. We have had one acknowledgement only—not one answer.

We now lay before you these four recommendations:

(a) That in every mill there be set apart one room, containing a table, a blackboard, chairs, shelves, good light, chalk, paper, pens and ink with the following books, Sindall's "Elementary Manual of Paper Technology," Cross & Bevan's "Paper-making," and Beadles "Chapters on Paper-making," Cross, Bevan & Sindall's "Wood Pulp and Its Uses," "The Paper-Maker's Handbook," by James Beveridge, and the "Pulp and Paper Magazine of Canada."

(b) That this room be placed in charge of some responsible, interested, technical man, who shall be engaged to supervise as a part of regular duties. The work would be more successful if some remuneration were paid, to make it a business matter, as it would call for expenditure of time and thought. Arrangements would be made to have short talks by members of the staff on phases of the work with the use of the blackboard.

(c) That correspondence school work be taken up, to be paid for in part or in whole by this mill, the proportion of such assistance to be determined by the executive staff in consideration of the position and capability of the employee.

(d) That for special cases and upon the votes of fellow employees with the approval of the executive staff, scholarships be granted to employes to undertake special work at other centres where technical schools exist or where opportunity be found to work on special machinery for study of mill operations.

We feel assured that these suggestions are feasible, will be beneficial and will produce a profit on any investment required to establish and maintain the activities outlined. This work cannot be done for nothing, and will not work spontaneously.

Your Committee wishes to draw your attention to another point. We are at war, and Canada has sent men to the front, good men, sound men and brave men, some will never come back, many will come back crippled by their honourable wounds, and we must prepare to receive them and help them to maintain their independence. Dr. Sexton, of the Nova Scotia Technical College, who has taken up this question, told the Chairman of your Committee that it was usually considered that three months of listless convalescence and idleness resulted in a man's becoming a public charge. This must be avoided, and we are asked to supply the authorities with a list of occupations in our industry in which crippled men can be used, and to the duties of which they may be trained. Surely two or three men could be taken into each of our mills and given honourable employment. In this way it is pointed out that our nation, and therefore ourselves may save much of the trouble and expense due to a large pension list. Your Committee therefore recommends that each mill be asked to hold two or more openings for crippled men, stating what position would be, and what extent of disablement could be suffered without unfitting the man for the job. For instance, a beater-man might get along all right with an artificial leg, or one eye. It would not be understood that the highest efficiency could be obtained, but at least a man who has suffered for a good cause would be helped without danger or loss to his fellows.

Mr. Thorn reported for the Committee on Samples. The Committee had succeeded in gathering a very complete set of samples of paper manufactured in Canada, and hoped that in another year samples of European manufacture might be obtained. The samples collected by the Committee were on exhibit at the meeting.

Owing to the absence of Mr. DeCew, no report was received from the Committee on Standards.

Mr. Crossley discussed a recent journal article on "Testing Pulp," by a joint Committee of the American Pulp and Paper Association, and the Wood Pulp Importers' Association, and recommended that the Committee on Standards get in touch with this Committee. Mr. McIntyre pointed out this had already been done, the two Committees intended to co-operate.

Mr. Riordon referred to a very interesting work that had been done by the U. S. Department of Agriculture on Standardization of Cotton. He thought it would be well worth the while of the Committee to look into this report, and obtain samples, as it might serve as a means for the investigation of the grading of samples of pulp. He regarded the grading of pulp of far greater importance than determining its moisture.

Dr. Bates said that he was glad to see the importance of grading of pulp and paper was recognized. He thought it would be a comparatively easy matter to standardize methods of analysis, but that the real work of the Committee would be in the direction of the standards for pulp and paper.

The Treasurer's report showing a favourable balance was read and adopted.

Appointing of Committees. It was moved by Mr. Monette, seconded by Mr. Thorne, "That the present Committee continue to act."—Carried.

The meeting then proceeded to the discussion of "Groundwood Problems," which was opened with a paper by Mr. A. O. Bowness, of the E. B. Eddy Co., Hull, Que.

The Banquet

At 7.45 about seventy members sat down to dinner in the Ball Room. At the head of the table were: President Acer, retiring President Weldon, Mr. Frank L. Moore, of the American Paper and Pulp Association, Mr. G. F. Steele, of the News-Print Manufacturers' Association, Mr. R. H. Campbell, Dominion Director of Forestry, Mr. H. G. Scully, Secretary of the Ontario Papermakers' Safety Association, Mr. A. G. Pounsford, Expert to the Association, and Messrs. Carl Riordon, A. G. Campion, and C. Howard Smith.

During dinner Mr. Dumbrille, the noted patriotic singer, gave some selections, to the great pleasure of those present. Due honour having been done to the repast, Mr. Acer proposed the toast "The King," which was responded to in the usual loyal manner.

He thereupon called upon the guests to drink to the health of "Our Guests."

Mr. Frank L. Moore responded to the toast in his customary happy vein. Mr. Moore said he thought he must be the victim of circumstance in somewhat the same manner as the prisoner in the jail who said he was the victim of the unlucky thirteen. Upon being questioned what the unlucky thirteen was, he said, "The judge and twelve jurymen."

He expressed great satisfaction at the large meeting which he saw before him, and gave credit to President Weldon for great activity during the past year. Mr. Moore said that he would go back to the members of the American Association and tell them of the advances which he had seen in Canada, as he felt sure it would be an inspiration to the members of the American Association to know just what had been done in this country.

He was glad to see that the Association adopted the group system or organization, under which those of common interests get together to discuss common problems.

"Such an arrangement must be the case in any large Association of men whose interests are dependent upon natural resources," said Mr. Moore. He went on to state that the great necessity of organizing not only in Canada, but of co-operation between Canada and the United States.

In straightforwardness and friendliness and hearty co-operation, Mr. Moore believed that the future of pulp and paper industries would be advanced. He particularly emphasized the point of straightforwardness. "I have often said to my friends across the line, 'Do as you say you will do.' As soon as you do that I will join in heartily with you in whatever enterprise you are undertaking." Mr. Moore was warmly of the opinion that no really good development could come among manufacturers until absolute frankness had been developed among all. In such a way, and in no other way, would it be possible to give a proper return to stockholders. Mr. Moore urged the strong support by paper manufacturers in all classes to the national organization. He urged upon Canadians the great desirability of loyalty to their country, and then by getting closer together in a national sense they would be ready to get closer together to other nations in an international sense. He hoped that the United States and Canada would draw together in their mutual interests on all problems and thrash them out. From these activities would come the benefit of Association work.

Passing to the question of raw material, Mr. Moore was of the opinion that Canada can handle its forests differently from the way in which they must be handled in the United States. The natural resources are the basis of prosperity, and it is greatly desirable that Canadians will handle their forests properly. "There is a great danger of the sentimentalist in the forest," said Mr. Moore, "and we must be careful to help out nature and not retard her by suppressing growth which would be used in the upbuilding of mankind." "You are considering these problems," said Mr. Moore, "and they are of vital importance to you. It is of great importance that you should give these matters the most careful study, and the benefit of the wisest minds you can bring to bear."

Overseas, said Mr. Moore, Canada is doing a great work. She is making history, and is making a place for herself in the eyes of the world. All Canada has joined together and is making a stubborn fight that her native land may be pure, and unstained in the history of the world. Mr. Moore rendered all honour to those brave Canadians who had gone to the front, and to the statesmen who are shouldering the burden, and to the workingmen who are bearing up a great part of the load of this terrible conflict. "My only hope is," concluded Mr. Moore, "that the United States may show the broadmindedness that our statesmen are showing today." "Nothing," said Mr. Moore, "is more glorious than defending one's native land." In conclusion he read a sonnet inscribed to the immortal country Belgium, whose plucky fight at the beginning of the war had been the means of saving the world from an oppression too terrible to imagine.

President Acer thanked Mr. Moore for his speech, saying that it was encouraging to Canadians to have such a fine support in aims and ideals from the cousins.

The balance of Mr. Steele's address, which lasted over an hour, and was listened to with rapt attention by all present, dealt mainly with the work of co-operation, which had been done by the News-print Manufacturers' Association, and with the projects which had been outlined for the present year.

By his depth of knowledge, keenness of insight, and broadness of outlook, Mr. Steele brought home to the gathering many truths which had never before been realized. It was an epoch-making address, and it is only to be regretted that it is not possible to reproduce it in full.

Following Mr. Steele, Mr. Acer called upon Mr. C. H. L. Jones, of the Spanish River Pulp and Paper Mills, Sault Ste. Marie, Ont.

Mr. Jones was very witty and delighted the audience with his little quips at the expense of some of the members of the Canadian industry.

Speaking seriously on the subject which had been assigned to him by the President, Mr. Jones expressed some convictions which are worthy of the deepest consideration of those in authority at the present time.

While hoping and praying that Canadians would respond to the call to arms in a way which was truly worthy of them, Mr. Jones expressed the hope also that the recruiting which should be done in the near future, should be done upon a scientific basis, and that those who were naturally fitted to go to war should depart, while those who were required at home should have to stay. The result of an indiscriminate recruiting dependent alone upon the loyalty of individual men would not redound to the greatest advantage of the country. The recruiting must be done with an eye to

ultimate victory, not only on the battlefield, but also in the industrial centres. Mr. Jones thought it behooved every manufacturer to take this matter most closely into consideration, and to ask himself questions as to the type of men who were enlisting from the plant, and to see that the right men enlisted.

Commenting on the song, "Keep the Home Fires Burning," which had been sung during the evening, Mr. Jones declared: "It is all very well to keep the home fires burning, but we who are in such close touch with industry, and who have such intimate relations with a large number of men who are going to the front should also see that there is coal in the bin to keep those camp fires burning."

Mr. Frank Moore invited all those present to go to New York to the Annual Meeting of the American Association.

Mr. C. Howard Smith pleaded for a closer relation between the technical and business end of the Association, urging that it would not be possible to develop the Canadian industry to its highest extent unless technical men had an opportunity to show what they could do. Mr. Smith expressed the conviction that unless a greater number of lines were produced and the initiative taken with regard to many kinds of paper which are not now manufactured in Canada, the future of the industry would not be as great as it ought to be.

Mr. C. B. Thorne, upon being called upon by the President, vigorously supported Mr. Smith, and contended that the time had come for the greater recognition of the technical man. Further, Mr. Thorne urged the collection of samples of paper and the placing of exhibitions in all parts of the world, so that Canadian papers should be known by foreign countries.

Mr. G. F. Steele, asked to add just a word, and stated most emphatically that he believed that the day of the technical man had come, and that it was absolutely necessary now to develop along scientific lines.

The meeting took opportunity to pay honour to Mrs. Steele by sending to her room in the hotel the bouquet from the head table, and due honour having been done to the King by the singing of the National Anthem, the meeting came to a conclusion.

ANNUAL MEETING HINDE & DAUCH PAPER CO.

The annual meeting of the Hine & Dauch Paper Co. of Canada, Ltd., was held at the office of the company on Wednesday, Jan. 26th.

The report for the year was very satisfactory, and the following directors were elected: Mr. J. J. Dauch, Sandusky, Ohio; Mr. Sidney Frohman, Sandusky, Ohio; Mr. John Watt, Toronto; Mr. O. H. Moore, Toronto, and Mr. Ralph King, Toronto.

Mr. J. J. Dauch was re-elected President; Mr. Ralph King Vice-President; Mr. Frohman, Secretary; Mr. T. E. Lloyd, Assistant Secretary; Mr. O. H. Moore, Treasurer and General Manager.

THE BRITISH EMBARGO.

An embargo on export of paper-making materials, forecasted several days ago by the British Government, has been put into effect. Shipments of cotton and linen rags and waste paper are prohibited.

Sweden's embargo on export of wood pulp is believed to have prompted Great Britain's action. Other wares on which an embargo has been put recently, except for shipment to Britain's allies and to Spain and Portugal, include cordage and manila twine, files, rum and imitation rum, and unmounted canes and sticks.

Review of Canadian Paper Trade

The following letters from the leading pulp and paper makers throughout Canada, secured by our Toronto correspondent, gives an excellent idea of the progress made during the past year, as well as the future prospects of the industry. Practically every big manufacturer is optimistic regarding the future, as a perusal of the following letters will indicate:—

Riordon Pulp & Paper Co.

In regard to improvements and extensions of our mills for 1916, we are installing a rossing plant at Haileybury for barking wood intended for our Merritton, Ont., sulphite plant.

We will install an electrolytic bleaching plant at Merritton to bleach our present unbleached tonnage of 30 tons per day. We propose to make a higher grade strong bleached sulphite at Merritton, and expect to have it in operation by June 1st. The Merritton sulphite is noted for the strong character of its fibre, it being one of the pioneer sulphite mills of America, and its product is eagerly sought after by the Niagara District mills, who absorb the whole tonnage at present outside of a quantity going to Toronto and to Georgetown.

In our Hawkesbury plant we are making some improvements there, by which we hope to add ten tons per day to the production, and intend making an average of 200 tons per day in the two mills.

Laurentide Company, Ltd.

We made no change in our paper or pulp mill during 1915, we simply completed our new power plant with a capacity of 120,000 horse power.

The outlook for 1916 is very much brighter than it was for 1915. All the news, board and sulphite mills are running to capacity, and it also looks as if the ground wood market would be much stronger than it is at present. The foreign demand, as you are no doubt aware, in addition to that of the United States and Canada, is very great. The trouble is lack of shipping facilities.

Brompton Pulp & Paper Co.

We have not to date made any very extensive improvements of installations to our plant during the past year, and have no new lines on the market. We have, however, placed an order for 20 more dryers, and the necessary equipment to double the capacity of our present box board machine; this will be completed some time in May.

We are also contemplating increasing the capacity of our sulphite mill very materially during the coming year; this will go to show that we regard the outlook for the coming year as much improved over the same date one year ago.

Price Bros. & Co.

The output of Jonquiere Paper Machine has been increased 40 per cent by the installation of additional dryers. This machine is now operated electrically. At Kenogami mixing tanks were installed, replacing, to

a certain extent, beaters. The paper machines were speeded up to 630 ft., giving an average output of 160 tons per day for the three machines. A new design of barking drum was installed.

The above referred to changes in Kenogami and Jonquiere have increased the capacity of these two plants fully 20 per cent.

For the coming year at Kenogami another barking drum of special design will be installed. Considerable improvements in the boiler room will be made. The output of Kenogami groundwood mill will be increased fully 20 per cent by the installation of additional grinders and screens. It is expected that the question of an additional paper unit at Kenogami will be decided this year.

The writer has every reason to believe the outlook for the present year is exceedingly bright compared with last year, and arrives at this conclusion from the fact that there is a greater demand for newsprint and sulphite and better prices than a year ago. It would not surprise the writer if there was a shortage of newsprint next spring, and a considerable shortage of sulphite at that time. The cheaper grades of board from which the manufacturer receives a very small profit will show up this year very much better. Sulphite will, in all probability, sell at no far date at fully 60 per cent higher than a year ago.

Altogether, 1916 looks very encouraging.

Howard Smith Paper Mills, Ltd.

In regard to market conditions, would say that we consider the conditions very much improved over what they were twelve months ago. Sales are better and prices firmer.

There is no doubt that with the large advance in the price of all raw materials and supplies, that manufacturers will have to increase the cost in the near future.

We have not added to our plant since we finished building, as the plant was in every respect complete for a one machine installation. We have added many new lines of the higher grades, such as Krypton Parchment, Old Dominion Bond, Chaldean Vellum and Wedding Vellums, and are glad to say that these are finding a satisfactory sale with the Canadian consumers.

Canada Paper Co.

The Canada Paper Company have improved their plant in many ways during the past year. At their St. Francis mill a new 450 h.p. engine has been put in to drive their 156 in. machine, and the machine has also been equipped with a new Warran winder, which is the latest word in making hard and even newsprint rolls. A new Custodis Radical Brick stack 6 ft. 6 in. by 125 ft. high has just been finished, and is now in use.

Many improvements have been made at the Windsor Mill, where new winders have been installed, capable of making good rolls from half an inch to six feet wide. A Duplex machine has also been installed, and the company are now turning out fancy wall papers, duplex envelope, duplex wrapper, and their celebrated safety waterproof wrapper. This latter is now being used extensively by all the mills for wrapping fine papers, which it protects perfectly.

The firm has also extended their bleaching apparatus, now bleaching all their own stock.

(Additional Reports will be published in our next issue).

PARTIAL LIST OF THOSE ATTENDING THIRD ANNUAL MEETING, CANADIAN PULP AND PAPER ASSOCIATION, MONTREAL, FEB. 10TH, 1916.

J. H. A. Acer, Laurentide Co., Ltd., Montreal; F. H. Anson, Abitibi Power & Paper Co., Montreal; E. H. Askwith, Riordon Pulp & Paper Co., Ltd., Montreal; J. A. Bothwell, Brompton Pulp & Paper Co., East Angus, Que.; C. E. Buckholz, Geo. Hall Coal Co., Montreal; A. G. Campion, Belgo-Canadian Pulp & Paper Co., Ltd., Shawinigan Falls, Que.; Roy Campbell, Sec'y-Treas. Canadian Pulp & Paper Association; F. J. Campbell, Canada Paper Co., Ltd., Windsor Mills, Que.; Jas. Carruthers, Interlake Tissue Mills, Merriton, Ont.; Geo. Challes, Riordon Pulp & Paper Co., Ltd., Toronto; Harold Crabtree, Edwin Crabtree & Sons, Crabtree Mills, Que.; A. L. Dawe, Howard Smith Paper Mills, Ltd., Montreal; F. J. Duncan, Provincial Paper Mills Co., Ltd., Toronto; H. R. Erskine, J. R. Booth, Ottawa; Thos. Ford, Ford & Co., Portneuf Sta., Que.; F. H. Gage, Kinleith Paper Co., Toronto; L. H. Gardner, Garden City Tissue Mills, St. Catharines, Ont.; W. P. Gundy, Kinleith Paper Co., Toronto; John Hewitt, Jr., Price Bros. & Co., Ltd., Quebec, Que.; R. T. Houk, Jr., Laurentide Company, Ltd., Montreal; T. A. Hubley, Howard Smith Paper Mills, Ltd., Montreal; A. D. Huff, Laurentide Co., Ltd., Montreal; C. H. L. Jones, Spanish River Paper Mills, Sault Ste. Marie, Ont.; H. H. McArthur, News Pulp & Paper Co., Montreal; R. A. McInnes, Abitibi Power & Paper Co., Montreal; Geo. M. McKee, Donnacona Paper Co., Ltd., Donnacona, Que.; A. G. McIntyre, Matagami Pulp Co., Toronto; F. L. Moore, Pres. American Paper & Pulp Association, Watertown, N.Y.; D. J. Munn, Alex. McArthur & Co., Montreal; G. W. Pauline, Ritchie & Ramsay, Toronto; E. R. Pepin, Montreal Paper Co., Ltd., Portneuf, Que.; Frank Powell, News Pulp & Paper Co., Montreal; W. F. Robinson, Laurentide Co., Ltd., Montreal; Jean Rolland, The Rolland Paper Co., Ltd., Montreal; S. J. B. Rolland, The Rolland Paper Co., Ltd., Montreal; Carl Riordon, Riordon Pulp & Paper Co., Ltd., Montreal; H. D. Scully, Ontario Paper Makers Safety Association, Toronto; T. J. Stevenson, Riordon Pulp & Paper Co., Ltd., Montreal; C. H. Smith, Howard Smith Paper Mills, Montreal; G. F. Steele, Newsprint Manufacturers' Association, New York, N.Y.; J. F. Taylor, The E. B. Eddy Co., Ltd., Hull, Que.; R. S. Waldie, Toronto Paper Mfg. Co., Cornwall, Ont.; J. R. Walker, J. R. Walker Co., Montreal; I. H. Weldon, Provincial Paper Mills Co., Ltd., Toronto.

Mr. J. A. Bothwell, of the Brompton Pulp & Paper Co., East Angus, Que., reported for the Mechanical Pulp Section, saying that the situation at the present time is very strong on account of the fact that more paper is being made. Further, there is a shortage of wood everywhere, and may be difficult for the firms who are not covered to get all the pulp that they require.

Mr. J. H. A. Acer and Mr. O. H. Moore reported for the Board Section, that the situation at the present time is strong; that Canadian and American mills alike are crowded with business and therefore, the outlook for the future is very bright indeed.

Mr. C. Howard Smith reported for the Book and Writing Section that considerable progress had been made during the year in securing uniform trade customs. Demands for paper were excellent and the mills working to normal.

Pulp and Paper Notes

The United States last year sold \$2,500,000 worth of wood from national forests.

England imported £2,648,000 worth of chemical pulp from Sweden last year, and £390,000 worth of mechanical pulp. She also imported £115,000 worth of the latter from Canada.

Walter Runciman, President of the Board of Trade, recent met the leading British newspaper owners regarding proposals to reduce importations of paper and wood pulp by forty per cent, and thus liberate a considerable number of ships for other trade.

Several car loads of pulp wood have been shipped froh Bartlett's Station by the Nixon brothers.

According to Lloyd's, who are the greatest paper manufacturers in Great Britain, there is only sufficient pulp in the country to meet normal requirements until March.

Machinery is now being installed at the plant of the Cape Breton Pulp Company at St. Ann's, N.S.

Sweden ships annually \$8,000,000 to \$10,000,000 worth of chemical pulp to the United States in normal times.

One of the largest pulp and paper plants in Canada is now producing a new product from pulp, a substitute for lard. This new form of cooking fat is now being placed on the market. The Canadian mill is at La Tugue, on the Canadian Northern Railway in Northern Quebec, the American branch is at Berlin, New Hampshire.

The Lake Superior Paper Company have agreed to take all the pulp that the settlers on railway lands can supply, so pulp cutting is being actively prosecuted around Hearst in New Ontario.

The Wood Products Company, Limited, have been granted a Dominion charter with capital stock of \$100,000 and head office at Toronto. The company is given wide powers, including the destructive distillation of wood, the manufacture of charcoal, wood alcohol, etc., and to carry on business as timber and wood growers, to build and operate pulp and paper mills and to manufacture and sell pulp and paper. Toronto capitalists are behind this enterprise.

It is understood that the Metagami Pulp Company is negotiating for the Sweet Claims, adjoining the Taylor properties and close to the Jamieson claims in Robb Township, Northern Ontario.

The Metagami Pulp and Paper Company, which had intended to erect a large pulp and paper mill at Smooth Rock Falls, Ont., have decided to let the plan remain undeveloped until the money markets become more favorable.

The Chicoutimi Pulp Company are applying to the Quebec Legislature for the right to erect sluices and dams for storing water in Lake Kenogami and the lakes and streams emptying therein, so as to regularize the course of the Chicoutimi and Aux Sables Rivers. They are also applying for the right to sell, under an approved tariff, to persons who will require the same, the water thus accumulated.

THE JAPANESE PULP INDUSTRY.

Pulp is produced by the Oil Paper Manufacturing Company's branch in Japanese Saghalien, the Karafuto Kogyo (Saghalien Industrial Company), and the Tokai Shiryo Company. The first-named started operations in November last year, and the second in September last, while the Tokai Shiryo Kaisha has been in business since 1907. The Saghalien branch of the Oil Paper Mill contemplates turning out 7,000 tons of pulp each year. Its output in June last was 380 tons, the figure increasing to 450 tons in July, and 550 tons in August. The monthly output by the Karafuto Kogyo Kaisha ranges from 400 to 500 tons at present, but in future the annual output will probably be increased to 8,500 tons. The monthly output by the Tokai Shiryo Kaisha is at present 700 tons. Before the outbreak of the war the import of pulp to Japan from Germany amounted to 20,000 tons per year, but this has been entirely cut off. The importation from Sweden and Norway is estimated to show an increase this year of about 10,000 tons as against previous years. The deficit may be covered by the increasing output on the part of three Japanese mills referred to. The home-made pulp is admitted to be inferior to the imports. The following table shows the imports of pulp from January 1 to July 31 this year, together with those for the corresponding period of last year:

	This year.	Last year.
	Tons.	Tons.
Great Britain	1,728	1,252
Germany	624	12,969
Sweden	17,471	10,986
Norway	3,627	3,557
Denmark	171	50
United States	689	191
Other countries	4,695	1,775
Total	29,004	30,780

—(The Japanese Chamber of Commerce Journal.)

OUR TRADE IN PAPER WITHIN EMPIRE.

England and the colonies are increasing their trade with Canada. England's buying of our newsprint in six months this year total \$106,761, compared with \$101,299. Australia's trade aggregates \$306,143, compared with \$298,576. New Zealand's imports are slightly down, being \$149,661, as against in 1914, \$154,810. There is ample room for us to increase our exports to these and other parts of the Empire.

AEROPLANES OVER FORESTS.

The superintendent of forest protection of the Province of Quebec will use aeroplanes in future to discover forest fires.

The Argentine Market for News Paper

In view of the large pulpwood forests in Canada and the natural advantages the Dominion possesses in the shape of cheap and abundant water-power, the observer of local commercial conditions is surprised at the relatively small part played by Canadian mills in the supplying of the large and growing Argentine market for news paper. Up to the present Canadian mills have not evinced much interest in Argentina as a market for their products, and ignorance of the conditions governing the local supply of paper has frequently been sufficient to deter an investigator from proceeding further.

Even though there may be obstacles to be surmounted, it is doubtful whether these have ever been seriously investigated by a financially-strong Canadian mill in relation to the corresponding advantages represented by the larger profits to be gained from direct trading.

Argentina and Brazil in normal years, import some 66,000 tons of printing paper annually. During the year 1913, Argentina alone imported 30,750 tons of newsprint, which taken at the official customs valuation of 6 cents gold per kilo, would represent a value of \$1,845,000. The importance of this figure will be better appreciated when it is considered that Canada's exports of paper to the whole of the British Empire were valued in 1913 at \$1,830,315, and the total exports to all destinations valued at \$6,351,000.

The total number of periodicals published in Argentina is 795, of which 340 are published in the capital city of Buenos Aires.

Nearly all these publications are printed in Spanish, but there are sixteen Italian, nine English, six German, five French, four Arabic and two Danish papers. Twenty-nine appear in a combination of two or more languages. It may be interesting to note that the oldest newspaper in Buenos Aires is the English daily, *The Standard*, now in its fifty-fifth year; another English daily, the *Buenos Aires Herald*, is in its forty-eighth year, while the most reliable and comprehensive financial and commercial journal published in the Republic is the English weekly *Review of the River Plate*.

	Metric tons 1909.	Metric tons 1910.	Metric tons 1911.	Metric tons 1912.	Metric tons 1913.
Germany . . .	7,939	11,604	10,660	10,427	10,591
Austria . . .	59	62	11	107	10
Belgium . . .	21	159	51	19	....
Canada . . .	49	114	448	10	25
Spain . . . . .	....	54	....	....	....
United States .	2,257	6,350	10,952	12,572	11,039
France	7	16	16	133	28
Italy . . . . .	....	....	46	22	12
Norway	120	395	174	861	4,446
Holland	3	289	116	86	162
U't'd Kingdom	2,229	2,925	3,791	1,478	223
Russia . . . .	....	....	....	....	5
Sweden	3,627	1,633	1,222	2,053	4,177
Switzerland . .	2	....	42	32	23
Totals	16,386	23,602	27,460	27,813	30,749

During the past ten years, Germany and Sweden have been steadily supplying the Argentine market

with 90 per cent of its requirements for roll news. During the same period the British mills have quietly dropped out. Canada is credited with almost insignificant quantities, but it is more than likely that a considerable amount of Canadian paper passing through the port of New York has been exported as United States produce.

The Present Position.

The paper trade has been much affected by recent European events, and conditions at present are quite different to those prevailing previously. Canadian mills have now an opportunity of entering a large market on equal terms with her competitors.

Though no detailed statistics are as yet available for the years 1914 and 1915, it is possible to anticipate to a certain extent the results of the two years trading. Little if any German paper is coming forward, and the representative of German mills is practically out of business. The firm handling American paper is reported to have been seriously affected by the period of financial depression which preceded the outbreak of the war. Norwegian exporters have been quick to take advantage of the present favorable opportunities, and when the figures relating to the trade of 1914 and 1915 are published, Norwegian mills will probably be found to have captured a large share of the trade.—Report of Canadian Trade Commission.

PAPER DEALER ON INSURANCE BOARD.

Mr. John F. Ellis, of the Barber & Ellis Co., paper dealers and envelope makers of Toronto, has just been elected a director of the Crown Life Insurance Company. Before going into the paper business Mr. Ellis was manager of the Manufacturers' Life, so that his return to the Insurance field is in a measure a return to his first love.

Mr. Ellis is very well known in business circles in Toronto, and throughout the Province, having been President of the Canadian Manufacturers' Association, The Toronto Board of Trade and other organizations. He also was one of the founders of the Commercial Travellers' Association. The firm of Barber & Ellis is one of the best known in the paper and envelope trade.

THE ABITIBI PULP AND PAPER CO.

"The Abitibi Pulp and Paper Company is shipping 215 tons of newsprint every day now," declared F. H. Anson, the president of the company, the other day. "All but a very small proportion is going to United States papers, too. The four paper machines are almost up to full speed now."

The company has 800 men in the mills, and 1,400 in the woods now, and in addition to the paper output, the company is turning out fifty tons of sulphite daily.

HARMSWORTH MILL FIRE.

The Harmsworth paper plant at Grand Falls, Newfoundland, which supplies the newspapers owned by Lord Northcliffe, of England, was the scene some days ago of a fire which destroyed thousands of cords of barked wood. The probable loss is \$100,000.

Mr. J. E. A. Dubuc, of the Chicoutimi Pulp Company, is on a visit to Europe. He returns to Canada early in March.

Annual Report of the Wayagamack Pulp & Paper Co.

That business is improving in the pulp and paper industry is evidenced by the annual report of the Wayagamack Pulp and Paper Company recently made public. Last year this company changed its fiscal year from June 20th to November 30th. For the seventeen months ending November 30th, 1915, earnings amounted to \$584,373, and net profits after payment of bond interest, \$286,873, equal to a trifle over 4 per cent on the five million dollar common stock. This is a considerable improvement over the showing of the previous year, when net earnings were at the rate of 3.88 per cent on the common.

The profit and loss figures presented in the three statements issued since organization, the 1915 figures being for seventeen and the others for twelve months, are tabulated below:—

	*1915	1914	1913
Earnings	\$584,373	\$403,903	\$256,774
Bond Int.	297,500	210,000	105,000
Net profit	\$286,873	\$193,903	\$151,773
Prev. Balance . . .	345,677	151,773	
Total, P. and L. . .	\$632,550	\$345,677	\$151,773

*17 months.

The company still has unissued \$1,500,000 first mortgage bonds, a fact which naturally suggests that under favorable conditions a portion of these bonds might be sold to liquidate the loan item of the statement and adjust the working capital position. It is to be noted in this connection that plant account has been enlarged considerably since the original financing was done. While the bonds outstanding have been stationary at \$3,500,000, the plant account has risen from \$2,077,784 on June 30th, 1913, to \$2,734,520, additional expenditure under this head in the past year having amounted to \$301,864, while \$15,470 was expended on property account.

The alternative to a sale of bonds is liquidation through surplus earnings, and now that the construction programme has been completed for the time being, bringing the capacity of the plant up to 150 tons a day in the past year, it is not unlikely that this course is in view. In any event, it has been officially denied from time to time that the company proposed to sell additional bonds. Comparisons of the leading items of the balance sheet are given in the following table:—

Liabilities.

	Nov. 30, 1915.	June 30, 1914.
Accounts payable	115,672	124,924
Bills payable	370,228	253,607
Loans	412,608	500,532
Int. Accrued	70,000	87,500
Charges Accrued	31,012	47,953
Reserves	58,675	79,146
Bonds	3,500,000	3,500,000
Stock	5,000,000	5,000,000
Profit and Loss balance	632,550	345,677
Total	\$10,190,748	\$9,939,343

Assets.

Accounts, rec.	183,500	222,138
Logs, etc.	672,990	527,096
Stores	108,621	122,481
Paper, etc.	25,895	50,703
Plant	2,734,520	2,432,656
Property	6,599,737	6,584,266
Total	\$10,190,748	\$9,939,343

After referring to the year's expenditure on capital account, the directors note in their annual report that \$103,335 was expended on maintenance and renewals in the past seventeen months, and that the entire plant was in a high state of efficiency. "The company has on hand large export contracts for shipment to England, Australia and South Africa. These have been taken at good advances over last year's prices, and the result will be favorably shown on next year's balance sheet."

At the annual meeting it was announced that the company's sales showed a substantial increase over sales at the same date a year ago. The directors and officers were re-elected as follows: J. N. Greenshields, K.C., president; C. R. Whitehead, vice-president; Hon. Robert Mackay, James W. Pyke.

CONVENTION WEEK IN NEW YORK.

(Special to Pulp and Paper Magazine.)

New York, N.Y., February 12, 1916.

Unusual interest is being manifested throughout the country in the coming convention of the American Paper and Pulp Association, and the National Paper Trade Association. Manufacturers and dealers from all parts of the country are now in the city, and it is expected that by the time the week closes there will be a record crowd of people here.

The American Paper and Pulp Association will convene at the Waldorf Astoria February 15th and 16th. The preliminary sessions of the various committees will hold fort on Wednesday, the 16th, and the general meeting of the Association will be held on Thursday morning. Many interesting addresses are expected to take place at the general meeting. The complex conditions surrounding the paper industry during the past year leads many to believe that this year's convention will be the most interesting in the history of the association. The election of officers, too, is looked forward to with keen interest. The report that President Moore will not consider re-election, and the rumor of the withdrawal of the News Division is causing much diverse comment as to the future of the association.

As usual, the convention will be brought to a close with the annual banquet. It will be held at the Waldorf on Thursday night. Secretary Naylor has already completed arrangements, and the affair is looked forward to with keen interest.

The thirteenth annual meeting of the National Paper Trade Association will also be held at the Waldorf Astoria, on Wednesday morning, February 16th. The jobbing trade has never before been confronted with so many problems requiring such careful consideration and this meeting is being awaited for with much enthusiasm. The sixth annual banquet on Wednesday night at the Waldorf will conclude the sessions.

OTTAWA NOTES

Ottawa, Ont., Feb. 10.

Further discussion on the need of tonnage for the pulp and paper industry of Canada took place in the House of Commons this week. The matter came up on Tuesday, when Hon. Rodolphe Lemieux informed Sir George Foster, Minister of Trade and Commerce, that he had just received a cable from an individual prominently interested in the pulp and paper industry, who was at present in England. "He says that the pulp interests in both Canada and Great Britain are distressed by reason of the fact," said Mr. Lemieux, "that many ships, even those of small tonnage, are being requisitioned by the Admiralty, and asks me to impress on the Government the importance of the matter. Steps should be taken to relieve the trade of that incubus. Of course, I understand the exigencies of the case, but at the same time trade must not be paralyzed. I may add that the pulp firms which have asked me to represent them before the Government state that they have large ten year contracts with the largest publishing firm in England, and that in view of the embargo which has lately been declared, the situation is most acute. That is why I ask that a point be strained on behalf of my fellow-countrymen."

Sir George Foster replied as follows: "The matter has not escaped the attention of the Government, or of a great many people who are deeply interested in transportation. There are some difficulties in the way, however. Not only has the matter been brought up with regard to pulp, but with reference to a great many other products which, though not as individualized as the pulp industry is under the present conditions, are yet most important to the country. A little while ago, for instance, a vessel was procured by the Elder-Dempster line to carry on its monthly service to South Africa. The cargo was allocated and ready for shipment, but Imperial necessities intervened; the vessel was requisitioned, and the goods which comprised the cargo are now lying in or on the way to the Port of St. John, and there is no boat to receive them. Whatever can be done, I am certain will be done, but the war and its necessities take precedence."

The estimates for 1916-17 which were brought down in Parliament last week, contain appropriations totalling some \$600,000 for printing and stationery. Of this \$300,000 is for printing, printing paper and binding for the House of Commons alone. These figures indicate the demand for paper which may be expected from the Government during the year. The total is about the same as that of last year. Some departments have cut down their requirements but on the other hand others have increased them as a result of war conditions. A quantity of stationery was destroyed by the fire which burned the Parliament Buildings last Thursday and this will also have to be replaced.

For the fitting up of the Victoria Museum as a new home for Parliament after the fire the Government placed a large order for fibre board, the product of Fibre Products, Limited, of Toronto, with which temporary offices have been constructed out of the huge rooms formerly used for the exhibition of specimens.

Mr. J. R. Booth, the well known paper manufacturer of this city, headed the list of individual subscriptions to the Canadian Patriotic Fund during the campaign recently undertaken in Ottawa. Lumbermen and paper manufacturers, in fact, crowd the top of the list,

other firms which contributed including the Hawkesbury Lumber Company, through Sir Henry Egan, the W. C. Edwards Company, Mr. J. B. Fraser, and others.

The latest firm to employ a professional forester is that of J. B. Snowball and Company, Ltd., of Chatham, N.B. Like the Laurentide Company, the Riordan Pulp and Paper Company and other pulp and paper firms in Eastern Canada which employ trained technical men for such work, the Snowball Company will have Mr. J. R. Gareau, a graduate of the Quebec Forest School, Laval University, assume general supervision over the woods operations on the company's limits. He will also make a map and timber estimate of these limits, and enforce close utilization of all merchantable material.

Mac.

THE CORNISH CHINA CLAY INDUSTRY.

(Special Correspondence.)

St. Austell, England, Jan. 18th.

For some considerable time the Cornish china clay merchants have been seriously handicapped with regard to their export trade to America. In fact, ever since the commencement of the war various difficulties have arisen in relation to shipping, resulting in a considerable loss to the staple industry generally. It was with a view to obtaining better conditions that an influential deputation waited on the Right Hon. Walter Runciman, M.P., the President of the Board of Trade on Tuesday morning of last week the (21st December), and to give their impressions on the present outlook, and to express their anxiety to assist the Government in keeping up our export trade with America, our creditor nation. The deputation included a number of leading exporters and others interested in the trade.

The points raised by the deputation were that in consequence of the commandeering of the boats by the War Office and others going out light, there was a scarcity of ships for their American orders, and even if steamers could be obtained there were insufficient facilities for loading at Fowey and other Cornish ports.

Mr. Runciman entirely agreed with the deputation upon the points raised, and in his reply said that everything possible ought to be done to bring about the desired result.

It is a very pleasing coincidence that Mr. Runciman should have made the appointment with the Cornish China Clay Merchants on that morning, particularly in view of the great speech he made in the House of Commons in the evening of the same day, when he showed the absolute necessity that if the war was to be successfully carried through, our trade generally, and our export trade in particular, should be fully maintained.

NEWFOUNDLAND PAPER MILLS.

Owing to the impossibility of getting boats, there is every likelihood of the Newfoundland paper mills being forced to close down for a time.

The largest plant in the colony, controlled by Lord Northcliffe, the London publisher, and his brothers, has a daily output of 200 tons of paper, and 50 tons of ground woodpulp. Four thousand tons of these materials are now awaiting the arrival of a steamer to take them to England. Two smaller concerns, one London-owned and the other operated by Newfoundland capital, manufacture mechanical pulp.

UNITED STATES NOTES

At the annual meeting of the directors of the Carthage Tissue Paper Company, held during the past fortnight at Watertown, N.Y., the following officers were elected: W. D. Ball, of Carthage, president and general manager; and H. Estabrook, of Canton, N.Y.

* * *

Shipments of pulpwood and timber in Wisconsin have increased more than 25 per cent over a year ago, according to railroad officials. What looked as though it would be one of the fullest seasons in many years in the northern woods, is turning out to be one of the liveliest. Capacity operation of pulp mills of the state for some months has made great inroads upon the vast piles of wood that clogged the yards up to last fall, when it looked as though they could not possibly hold another stick, and that fact has aided greatly in making this one of the busiest seasons in many years in the pulp wood camps.

* * *

O. W. Dodge, of the Dodge Evacuator Company, with offices in the 42nd Street Building, New York, has received word that the application for a patent in Germany for the Dodge system of taking condensation has been granted. The Dodge evacuator is now patented in fourteen different countries. The Dodge system of drying paper consists of a series of scoops which extend the length of the dryer, the water being caught up in these scoops and run off through a pipe in the axle of the dryer.

* * *

Details of the sale of the sulphite mill, of the defunct Battle Island Paper Company, of Fulton, N.Y., to Nelson L. Whitaker, became known during the last fortnight, when Mr. Whitman gave out the following statement:

"I have completed the purchase of the Battle Island plant, and, in addition, have secured an option on water power of 1,000 horse power, and a parcel of land adjacent to the Granby Pulp and Paper Company's plant, from that company, upon which it is the plan to erect an hydro-electric power development, the power produced to be transmitted to the old Battle Island sulphite mill, to replace the water power, of which the property has been disposed through the removal of the dam. If this plan can be successfully evolved the property in its entirety, including the new power supply to be purchased, will be turned over to a newly formed corporation which will in future operate the plant on a far more extensive scale than heretofore. The corporation will not only operate the plant, but will operate a line of lake-going boats for the transportation of its pulpwood. The plant will be put in operation just as soon as the preliminary details can be worked out."

* * *

At the annual meeting of the Highland Manufacturing Company of Holyoke, Mass., held last Wednesday, announcement was made that the company had recently added a large papeterie and envelope department in its mill. The department has been equipped with entirely new machinery.

The Wolverine Paper Company, recently organized to take over the plant of the Babcock Paper Manufacturing Company of Otsego, Mich., is at present engaged in installing machinery to improve the quality of the mill's product. The company is equipped to make tissues, light weight bond, waxing and waxed papers, both printed and plain.

* * *

Aaron Bagg, Jr., was re-elected president of the Parsons Paper Company, of Holyoke, Mass., at the annual meeting of the company, Edward P. Bagg is treasurer; Charles P. Randall, assistant treasurer; Aaron C. Bagg secretary. The treasurers are Aaron Bagg, Jr., Edward P. Bagg, Henry E. Gaylord, Edwin C. Weiser, and George F. Fowler.

* * *

Advices from San Francisco, Cal., state that the Zellerbach Paper Company has filed a suit against Gustave A. Aicher, Solomon Lazar and Louis Lazar, former owners of the Lazar-Aicher Paper Company, to recover \$75,000 damages for alleged breach of contract. Aicher and the Lazars formerly controlled the National Paper Products Company, the complaint alleges. Last April they sold the corporation to the Zellerbach Paper Company, a part of the consideration being that they would not again engage in the paper business in San Francisco, the complaint says. Recently they re-entered the local field, it is alleged, and by doing so damaged the Zellerbach Paper Company in the sum of \$75,000.

* * *

The new headquarters of the National Association of Waste Material Dealers at 185 Devonshire Street, Boston, were formerly opened on Tuesday, February 8, with a reception to members. Light refreshments were served, and members present inspected the headquarters which are in every way in keeping with the progress and success which the association has made.

* * *

The American Writing Paper Co., and several of the other mills at Holyoke, are re-adjusting the wages of their employees. The following announcement has been placed on the bulletin board of the American Writing. It is our intention to advance the wages of our help to take effect Monday, 31. "The increase for men who work by the day will be uniformly 23 cents a day. The pay for girls who work by the day and piece workers will be adjusted with an increase of approximately 10 per cent." General Manager Leeds states that the increase for the men who work by the day included the tour workers. For many of the day workers the increase amounts to 15 per cent. There will be about 3,700 employes of the company affected by the increase.

* * *

The new hydro-electric plant of the Oswego Falls completed. It is the third largest plant of its kind in New York States. The building is of concrete brick and steel, 1,110 by 90 feet, with several floors from the flumes and pits to the board section, with pleasing architectural designs throughout, and equipped with the latest improvements in every department.

The three new beater engines recently installed in the plant of the Waterliet Paper Company were placed in operation during the past week, and found to work most satisfactorily. Besides installing these new engines, an entirely new concrete floor has been placed in the washer room. Practically the entire basement has been made into a big storage room, a concrete floor having been placed under the mill. So far nearly \$40,000 has been spent on improvements at the mill since last fall, and still there is much more to do.

* * *

The Philadelphia Paper Stock Dealers' Association held its eleventh annual banquet in the Pink Room of the Volonnade Hotel, 15th and Chestnut Streets, during the past fortnight. A general reception was held from seven until seven-thirty, when some hundred-odd sat down to the festive board. After the invocation of divine blessing by Edward L. Corner, a very fine menu was enjoyed.

* * *

The following announcement of the Alling and Cory Company is a sample of the many that are now being issued by paper houses in this country, telling, as it does, the reason for the advancing prices: We are compelled to send you notice of increased prices on very many grades of paper. In doing so we desire to acquaint you with the reasons which make this necessary.

Practically everything that goes into the manufacture of paper has gone up in price, and it is very easy to show the reasons why. In the first place, rags have materially advanced because of the shutting off of the foreign supply, and because of the large use of domestic rags in the manufacture of powder, where to some extent they have taken the place of raw cotton. In the next place, all the chemicals which are used in paper manufacture are very much more expensive than they were formerly, and some of them—notably bleach—is almost impossible to secure at any price, as the chlorine gas, which is the essential part of the same, is eagerly sought for war purposes. As a result the price of chemical wood pulp has advanced, the situation has been made more acute because the entire European product of this pulp is used abroad, instead of being sent in part to this country.

The serious situation with regard to all dyes and colors do not need recital here. Some colors are impossible to procure at any price; others can be had only in small lots at prices enormously increased over the old rates, so that it is impossible to guarantee in advance the shades or the cost of any colored papers, and all quotations are made subject to change without notice and also subject to inevitable variations of shade.

In addition to all these things has come the sudden and enormous demand for paper. In the first place, our American manufacturers are receiving orders from all over the world because of the inability of the European manufacturers to supply their regular customers. Exporters are almost begging for goods at any price in order to meet this sudden and extremely heavy demand. In addition the domestic demand is very great. All stocks of paper have been kept to a minimum during the last year. Everybody has delayed ordering goods as long as he could. Manufacturing corporations have postponed issuing catalogues or other printed matter until they could be sure of the situation. Now everyone is placing his orders, and asking for prompt deliveries. As a result

the demand is greater than the supply, and the inevitable sequence has been the rise in prices. We will do the best we can to take care of your wants at the least possible increase, but we recommend prompt decisions rather than delays if you anticipate needing any quantities of paper.

NEW PRESIDENT SPANISH RIVER.

Mr. George H. Mead, who was recently elected to the presidency of the Spanish River Pulp and Paper Company in succession to Mr. W. E. Stavert, is one of the best known paper men on the Continent. Mr. Mead, who was vice-president of Spanish River for some time, is also head of the Mead Pulp & Paper Co., of Dayton, Ohio.

The new head of Spanish River got his first insight into paper making in Canada through the Lake Superior Company, a company he and Mr. H. S. Talbot were instrumental in organizing. He was vice-president and general manager of the Lake Superior Company at the time of its amalgamation with the Spanish River Pulp and Paper Company, and became vice-president of the new concern. The sales end of the Spanish Company has been directly under his charge, and the success in this department speaks volumes of his ability to organize. For several years he has been president of the Mead Pulp and Paper Company of Dayton, Ohio—a 4-machine book mill, which has been most successful financially and otherwise. Mr. Mead comes of an old paper making family, the Mead Pulp and Paper Company having been organized some fifty years ago by his father, Col. Harry Mead, of Dayton, Ohio. Mr. Mead is about 38 years of age, and besides his activities with the Mead and Spanish companies, is Chairman of the news division of the American Paper and Pulp Association. He is well known in the trade, has already established an organization, and should swing the Spanish Pulp and Paper Company into successful operation.

TO BUILD IN NEW ONTARIO.

In the last issue of the Pulp and Paper Magazine, the statement was made that Mr. A. G. McIntyre had resigned as Manager of the Bathurst Lumber Company (Pulp and Paper Section), and had been succeeded by Mr. J. H. Thickens.

Mr. McIntyre has gone to Toronto, where he has opened an office as Consulting Engineer for pulp and paper mills, and where he will also have charge of the building of a new seventy-five ton bleached sulphite mill in Northern Ontario. Associated with Mr. McIntyre in his new building enterprise are: Mr. A. A. MacDiarmid, formerly Chief Engineer of the Bathurst Lumber Company, who will occupy a similar position in connection with the new mill; Mr. A. G. Hinzke, Superintendent of sulphite mill, and Mr. J. H. Mayo, Assistant to the Manager. In addition, Mr. T. R. H. Murphy, formerly with Joseph H. Wallace & Company, of New York, is associated with the new company as Civil Engineer; Mr. George H. West as Electrical Engineer, and Mr. A. W. Block as Assistant Sulphite Engineer. The company controls about 1,000 miles of spruce timber lands, said to be well stocked with a good quality of pulpwood and water falls, capable of developing twenty thousand horse-power.

The Pulp and Paper Magazine expects to be able to give additional details regarding the name, location, capitalization and other particulars regarding the new company in the next issue.

PULP AND PAPER NEWS

The Beamsville Basket and Veneer Co., Limited, of Beamsville, Ont., has been granted a provincial charter with a capital of \$40,000.

H. L. Taylor, representing E. S. and A. Robinson, Limited, Bristol, Eng., was in Toronto and Montreal last week, and anxious to purchase paper of all kinds in Canada for his firm.

The Faculty of Forestry at Toronto University has 37 per cent of its undergraduates in the army on active service, and thirty-five per cent of its graduates. This is a splendid showing.

George R. Roberts, who for a number of years was Editor of the Canadian Baptist, Toronto, passed away recently in Toronto, in his 79th year. He was widely known among newspaper men.

Charles O. Smith, of the Evening Chronicle, Port Arthur, Ont., has been nominated as the Liberal candidate for the House of Commons for the new Federal riding of Port Arthur and Kenora.

The Martin Corrugated Box Co., 353 Pape Ave., Toronto, whose premises were badly gutted by fire a few weeks ago, are once more manufacturing in their own plant, and report business as most encouraging.

J. H. A. Acer, sales manager of the Laurentide Co., Montreal, has been elected a director of the Export Association of Canada, Limited, which was recently incorporated with headquarters in London, England.

W. J. Gage, President of W. J. Gage and Co., Toronto, and the Kinleith Paper Mills, St. Catharines, Ont., left recently for California with his wife and daughters, where he will spend the remainder of the winter.

The annual meeting of the Victoria Paper and Twine Co., Limited, Toronto, was held recently, when a splendid year's business was reported. The outlook for 1916 is highly encouraging. All the old officers were re-elected.

Wm. Wesley, publisher of the Bruce Herald and Times, at Walkerton, Ont., died last week in his 62nd year, after a short illness. He was one of the pioneer publishers of the province, and leaves three sons and three daughters.

Lt.-Col. John A. Cooper, founder and editor of the Canadian Courier, Toronto, and formerly editor of the Canadian Magazine, has accepted an offer to organize and command the 198th Battalion, Toronto, which is now being recruited.

J. B. Beveridge, manager of the Dryden Timber & Power Co., Dryden, Ont., is again a member of the

council of that town, having been returned by acclamation. He takes much interest in the welfare and prosperity of Dryden.

A convention of the sales representatives of the Beaver Board Companies from Canada and the United States was held recently in Buffalo. A visit was paid to the company's plant in Thorold, Ont., which is the largest of any operated. The convention was in every way a success.

Brown, Bros., Limited, Toronto, have sent out notice to the trade that they have been compelled to cancel all prices, as it is impossible for them to maintain present figures, when the mills are constantly advancing quotations owing to the increase in the cost of all raw materials. Red, green, blue, golden rod and brown are considerably higher, and in some lines it is impossible to procure these shades.

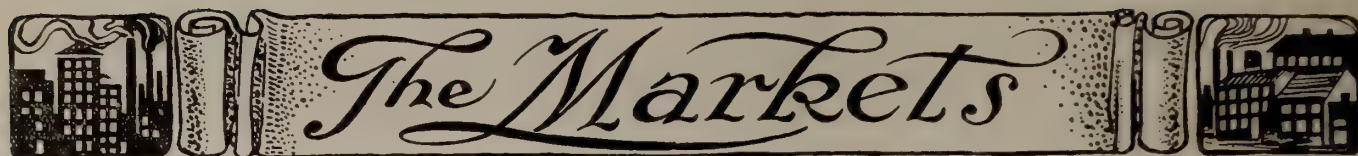
The annual meeting of the Ratcliff Paper Co., Limited, Toronto, was held recently, when very satisfactory reports were presented for the past year. The company some months ago removed to central and more commodious premises on York St. Fred L. Ratcliff was re-elected president; T. E. Gain, vice-president, and Norman Ratcliff, secretary. The prospects for the coming year are very bright.

Statistics of timber production on Crown lands in Ontario and of the revenue, etc., during 1915 and 1914 are as follows: Pine sawlogs, squart timber, etc.: 1915, 407,874,044 feet. b.m.; 1914, 382,582,027 ft. b.m. Sawlogs, etc., other than pine: 1915, 59,308,403 ft. b.m.; 1914, 77,451,857 ft. b.m. Pulpwood: 1915, 301,061 cords; 1914, 104,544 cords. Ties: 1915, 729,164; 1914, 5,439,845. Area under license: 1915, 15,712 square miles; 1914, 17,333 square miles. Revenue: 1915, \$1,629,640.60; 1914, \$2,009,122.43.

M. Y. McLean, ex-M.P. for South Huron, who was editor and proprietor of the Huron Expositor of Seaford, Ont., and passed away recently in his 73rd year, from heart failure, was one of the most successful publishers in Ontario, and for forty years was a guiding personality in public affairs throughout the district of Huron. He leaves a wife, one daughter and five sons, two of whom are with the colors, while another is associated with the Expositor.

RIORDON PULP & PAPER CO.

The Pulp and Paper Magazine understands that the Riordon Pulp and Paper Company just closed one of the most successful years in its history. This firm is the largest maker of unbleached sulphite fibre in America, and as a result of the war and the disturbance to regular channels of trade the company is able to dispose of its output at largely increased prices. The Riordon Company make 60,000 tons of unbleached sulphite per year.



The Markets

NEW YORK MARKETS.

New York, N.Y., Feb. 7, 1916.

Indications are that ground wood pulp will become unusually firm within the next few months. Thus far, the demand has been growing, and is considered very good. Grinders find inquiries rather plentiful, and are confident that they will be compelled to get higher prices soon. It is understood that the news-print plants are not able to operate their grinding machinery, and, as they are now consuming large quantities of ground wood pulp, will soon have pretty well exhausted all of their reserve supplies. Should the news mills continue at full capacity, and it is most likely that they will, the outlook for ground wood is very promising. The aspect is also brightened by other factors, which are tending to strengthen the market. Many paper makers are inclining to a greater use of ground wood, in order to conserve their sulphite supplies. Just to what extent this is being done, cannot yet be stated, but it is likely to make itself felt at a later date. The inquiry for export continues strong, but shipping facilities are becoming so poor, that they will soon be of absolutely no avail.

Chemical pulps maintain the higher prices which were caused by the first news of the Swedish embargo. It is now clearly understood that licenses will be granted by the Swedish Government for pulp exports to this country. However, it is reasoned by local importers that the pulp producers will make little effort to secure licenses for shipments on old contracts, which were made at the low figures. The fact is that conditions are now shaping themselves so that it appears that old contracts will be practically void, so far as prices are concerned. A large concern in this city received a cable from its mill in Sweden, this week, which stated that the Swedish pulp makers had agreed to demand part payment of extra costs on old contracts. This means that, in order to secure stock on old contracts, domestic paper manufacturers will have to pay part of the increased costs of manufacture, and also of transportation, as well as any other incidentals. Considerable interest was manifested in the action of England in prohibiting the importation of pulp. Until confirmation of this order was received from Great Britain, the tendency here was to doubt the news. Later, it was thought that the United States might benefit from this prohibition act, for then the large quantities of Swedish pulp, formerly consumed by Great Britain, would be likely to make their way to this country. However, with the Baltic Sea frozen and navigation out of the question, there is little possibility for relief for the market from abroad. Whether England will go to the extreme in her scheme to conserve as much of her ocean going tonnage for foods and munitions, remains to be seen. In such an event, it might be likely that no attempt would be made to get Canadian pulp. While domestic consumers feel that they might then get a share of the Dominions product, there is still the fear that the mother country

may place an embargo on pulp into the United States. With all of these possibilities current, buyers are somewhat undecided, and refrain from buying in the hope of a lower market. In the meantime, prices go higher, and, it is generally agreed, that the worst has only begun. Bleached sulphite maintains its high level firmly, some stock being held as high as 5½c. Easy bleaching is in good demand, but scarce, quotations ranging to 3¼c. Strong sulphite is acting in direct sympathy with the others, and cannot be had now for less than 3c. Kraft continues unusually firm. A little canvas of the city, at the time of writing, revealed the fact there was little more than thirty tons of imported kraft on dock here. This was held at about 3½c. Even for future shipment, it is hard to get much kraft pulp. It is understood that several mills may have to operate on something else, or shut down soon, because of their inability to get supplies of kraft pulp.

Rags have taken an unusually sharp advance during the week. This was partly due to a rumor, which came from what appeared authentic sources, that the Du Pont's had bought up large quantities of cotton rags for use in the making of gun cotton. According to the story, the Du Pont's had placed men in various parts of the country. These men had "singled" out considerable stocks and purchased on the same day at about the same time. This united action did not give the market a chance to advance. However, an acute shortage in cotton rags was the result, and quotations advanced sharply. The news of England's embargo on rags and paper stock also had considerable effect on the market. For the past six months or more, the United States has been receiving the bulk of its rag supplies from England. New cuttings, especially, came largely from England. Of course, the general realization was that if England would refuse to ship further rag supplies to America, mill supply houses with unfilled contracts, would be compelled to seek the open market. Such an added influx, added to the present briskness, would force prices very high. However, regardless of the embargo, one large local concern has received an offer of stock from an English house. Word has also been received of the Canadian embargo on rags. Under the conditions existing, it would hardly be able to make matters worse, so the Canadian embargo is not regarded with any degree of fear. Nevertheless, it would certainly be appreciated if any rags could be secured from the Dominion. Roofing stock is in splendid demand, and is selling at unusually high prices. Stock which sold a year ago at 50c. per hundred pounds, is now selling at 2c. a pound, and, if conditions continue, are predicted to go as high as 4c. Not much roofing stock is to be had, so this makes the demand felt to a greater extent.

Bagging and manila rope are moving well. However, owing to a general scarcity, prices are going very high. Gunny is quoted at 2¾c.; bright bagging at 2½c.; sound bagging at 1.70 to 2c.; mixed bagging at 1.60c. Manila rope has been quoted as high as 4c. As it is believed that bagging and rope are included in

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Air Compressors

Blethen, Hugh R., New York
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Air Hoists

Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.

Bags

Smart-Woods Ltd., Montreal, Que.

Barbers

Beznar, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Waterous Engine Works Co. Ltd., Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M. Co., Inc., New York, N.Y.

Bearers

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Tippet Arthur P. & Co., Montreal, Can.

Belting

Can. Fairbanks-Morse Co., Ltd., Montreal, Canada
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Can.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones and Glassco, St. Nicholas Building, Montreal
Keddaway, F. & Co., Montreal, Can.

Belt Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio

Blanching Powders

Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Can.
Winn & Holland, Montreal, Can.

Blowers

Sherbrooke Mach. Co., Sherbrooke, Que.

Boilers

Canadian Allis-Chalmers, Ltd., Toronto
Jenckes Machine Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Coarse Wire Cloth, Fourdrinier Wires

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier Street, Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Table Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Carriers

Northern Crane Works, Walkerville, Ont.

Chain Crane

Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Chain Blocks

Blethen, Hugh R., New York, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio

Chain Conveyors

The Waterous Engine Works Co., Limited, Brantford, Ont.

Main Drives (Silent and Steel Roller)

Jones and Glassco, St. Nicholas Building, Montreal

Change Speed Gears

Jones and Glassco, St. Nicholas Building, Montreal

Chemicals, Colors, Etc.

Brunner, Mond & Co., Montreal, Can.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet A. P. & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay

China Clay Co., Manchester, England
Klipstein, A. & Co., St. Peter Street, Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Hoppers

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Valley Iron Works, Appleton, Wis.
The Waterous Engine Works Co., Limited, Brantford, Ont.

High Die Integrators

The Waterous Engine Works Co., Limited, Brantford, Ont.

High Screens

Beznar, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Hatches

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes

Blethen Hugh R., New York, N.Y.
Hamilton, Wm. Co., Ltd. Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes—Overhead Travelling

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Conveying Machinery

Caldwell, H. W. & Son Co., Chicago, Ill.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jeffrey Mfg. Co., Montreal, Can.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Process Engineers, Ltd., Montreal, Can.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures

Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Couplings

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Cut Gears

Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.

Cylinders

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Can.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Johnson & Sons, C. H., St. Henry, Montreal, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining

Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Process Engineers, Ltd., Montreal, Can.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters

Pusey & Jones Company, Wilmington, Del.

Digester Gauges

Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms

Snell, Samuel, Co., Holyoke, Mass.

Dryers

Bertram Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.

Electric Lighting and Power Supplies

Forman, John, 248 Craig Street W., Montreal

Engines

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators

Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Scott, Ernest & Co., Fall River, Mass.

Exhausters

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery

Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Ltd., London, Eng.
Process Engineers Ltd., Montreal, Can.
Pusey & Jones Company, Wilmington, Del.

Exporters

Parsons Trading Co., New York, N.Y.

Felts

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Mont.

MILL SUPPLIES---Continued

- Admission, Ltd.**, St. Hyacinthe, Can.
Forritt, Joseph & Sons, Manchester, Eng.
Spencer, J. M. & Sons, Bury, England.
Tippett Arthur P. & Co., Montreal, Can.
- Filters**
Chambers Ltd., 152 Bay Street, Toronto.
Norwood Engineering Co., of Canada, Ltd., Cowansville, P. Q.
Pusey & Jones Company, Wilmington, Del.
- Friction Hoists**
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machin Co., Sherbrooke, Que.
Pusey & Jones Company, Wilmington, Del.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Generators and Transformers**
Chambers Ltd., 152 Bay Street, Toronto.
Siemens Co., of Canada, Ltd., Montreal, Can.
- Grinders**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Hand Power**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Helicoid Conveyor**
H. W. Caldwell & Son Co., Chicago.
- Hoists**
Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works Limited, Walkerville, Ont.
- Hoists—Chain Electric and Pneumatic**
Blethen, Hugh R., New York, N.Y.
- Iron Pulleys**
H. W. Caldwell & Son Co., Chicago.
Dodge Mfg. Co., Ltd., Toronto and Montreal.
The Waterous Engine Works Co., Limited, Brantford Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Jordan Engines**
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.
- Knives**
The Waterous Engine Works Co., Limited, Brantford, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.
- Kollergangs**
Bertrams Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
- Laying Machines**
Chambers, Ltd., Toronto.
Collis & Sons, J., London, Eng.
- Locomotives, Electric, Storage Battery**
The Jeffrey Mfg. Co., Columbus, Ohio
- Paper Stock, Etc.**
Hough, R., London, England.
Pullan, E., 490 Adelaide Street, W., Toronto, Can.
- Paper and Pulp Machinery**
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Can.
Marx, I. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Process Engineers, Ltd., Montreal, Canada.
Pusey-Jones Co., Wilmington, Del.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Walmaley, Chas. & Co., Bury, Eng.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
- Paper Machine Tachometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Paper Tester**
Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Stoke Newington, London, England.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pneumatic Thickeners**
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
- Presses**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Boomer & Boschert Press Co., Montreal, Can.
Chambers Ltd., 152 Bay Street, Toronto.
- Pneumatic Chain Blocks**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Press Rolls**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Process Engineers Limited, Montreal, Can.
- Pusey & Jones Company**, Wilmington, Del.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulp Stones**
Lombard & Co., Boston, Mass.
Stancliffe Estates Co., Ltd., Darley Dale, England.
- Pumps**
Bertrams Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Pusey & Jones Company, Wilmington, Del.
Smart-Turner Machine Co., Hamilton, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Recording Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Recording Thermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Refiners**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Ma.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
- Rope, Cotton and Manila**
Jones and Glasco, St. Nicholas Building, Montreal
- Rope Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.
- Rosin Size**
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- Rosin Size Boilers and Dissolvers**
Process Engineers, Ltd., Montreal, Can.
- Rotary Sulphur Furnaces**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Runways—Hand operated**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Save-Alls**
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.
- Screen Plates**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Screens**
Bertrams Ltd., Edinburgh, Scotland.
Beznar, Albert, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Mach. Wks., Glens Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio
Jenckes Machine Co., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Tippet Arthur P. & Co., Montreal, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
- Shredders**
The Jeffrey Mfg. Co., Columbus, Ohio
- Silters and Re-Winders**
Bertrams Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Moore & White Co., Philadelphia, Pa.
Pusey & Jones Company, Wilmington, Del.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Sprockets**
The Jeffrey Mfg. Co., Columbus, Ohio
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Split Pulleys—Wood and Steel**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Jeffrey Mfg. Co., Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Spiral Conveyor**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Straw Cutters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
- Straw Dusters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
- Strawboard Making Machines**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.

MILL SUPPLIES---Continued

- Steam Regulator**
Pickles, W. F. Buckland, Conn.
- Steel Barrels**
The Smart Turner Machine Co., Hamilton, Ont.
- Steel Drums**
The Smart Turner Machine Co., Hamilton, Ont.
- Stuff Chests**
The Watrous Engine Works Co., Limited Brantford, Ont.
- Suction Couch**
Process Engineers Ltd., Montreal, Can.
- Sulphite Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphate Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphur**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Tachometers (Hand and Stationary)**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Tanks**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Thermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Transmission Machinery**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Limited, Toronto.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones & Glassco, Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Transmission Rope**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Traveling Cranes**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart Turner Machine Co., Ltd., Hamilton, Ont.
- Trolleys**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turber Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Turbines**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc. New York, N.Y.
Voith, J. M., Wurttemberg, Germany.
William Hamilton Company, Ltd., Peterborough, Ont.
- Water Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
- Wire Cloth for Paper Machines**
Chambers, Ltd., Toronto.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste**
Hough, R., London, England.
- Wet Machines**
Bertrams Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co. Ltd., Brantford Ont.
- Wood Preparing Machinery**
Bezner, Albert, 290 Broadway, New York City

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R. Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- News Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co., (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.

Kraft

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Riordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp and Paper Mills Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag

- Eddy, The E. B. Co., Ltd., Hull, P. Q.
- Lincoln Paper Mills Co., Ltd., Merriton, Ont.
- Ford, J. & Co., Port Neuf.
- Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board

- McArthur, Alex. & Co., Montreal.

Blotting

- Canada Paper Co., Montreal.

Bono

- Canada Paper Co., Ltd., Montreal.
- Hewaró Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and Montreal, Que.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho

- Canada Paper Co., Ltd., Montreal
- Eddy Co., The E. B., Ltd., Hull, Que.
- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

British

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal & Toronto.

Building and Sheathing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper

Lazier Paper Mills, Ltd., Belleville,
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope

Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes

Hinde and Dauch Paper Co. of Canada, Toronto

Flour Sacks

Eddy Co., The E. B. Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal.

Glazed

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.

Kraft

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Ltd., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board

Walker, J. R. & Co., Montreal, Que.

News

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, New
foundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin Crabtree Mills, Quebec
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co. Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland and Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet

Eddy Co., The E. B. Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board

Beaver Co., Ltd., Beaverville, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde and Dauch Paper Co. of Canada, Toronto

Wood Board

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R., Ottawa.
Brompton Pulp Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal, Que.

Wrapping

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
See also Kraft.

Writing

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills Ltd., Beauport, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

- Calgary, Alta.**
Barber, Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Tees & Persse.
- Edmonton, Alta.**
Tees & Persse.
John Martin Paper Co., Ltd.
- Saskatoon, Alta.**
Tees & Persse.
- Vancouver, B.C.**
Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.
- Victoria, B.C.**
Mitchell Bros., 8 Bastion.
- Moose Jaw, Sask.**
Tees & Persse.
- Regina, Sask.**
Tees & Persse.
- Winnipeg, Man.**
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co. Ltd.
- St. John, N.B.**
Schofield Paper Co., Ltd., 26-30 Prince William.
- Moncton, N.B.**
Reid, F. P. & Co.
- Halifax, N.S.**
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.
- New Glasgow, N.S.**
McGregor, R. & Co.
- Kingston, Ont.**
Hendry, J.A., 875 Princess
- Hamilton, Ont.**
Buntin, Gillies & Co., Ltd., John and Jackson
Powis, A., 64 King E.
- Ottawa, Ont.**
Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B., Co.
- Port Arthur, Ont.**
Tees & Persse.
- Toronto, Ont.**
Barber-Ellis Co., Ltd., 71 Wellington Street, W.
Brown Bros., Ltd., 51 Wellington Street, W.
Juntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street
Victoria Paper & Twine Co., Ltd., 415 King W
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.
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Dickinson, John & Co., Ltd., 216 Lemoine
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. DeWolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
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Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
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- Quebec, Que.**
Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.
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Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York
Scandinavian American Trading Co., New York, N.Y.

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A New Wood Pulp Mill, about to be constructed, in the vicinity of Ottawa, would like to make arrangements with a few responsible paper manufacturers for the sale of about 7,500 tons of groundwood pulp and 15,000 tons sulphite fibre pulp, for a period of years, on an equitable basis of prices.—Write P. O. Box No. 1595, Montreal, Que.

WANTED, NIGHT BOSS for small fast News mill, must be a worker and have had previous experience, give full particulars. Apply Box 109, Pulp and Paper Magazine, 45 St. Alexander St., Montreal.

Mechanical Engineer

between twenty-five and thirty years old, with experience in sulphite mill, wanted. State education, age, experience, salary expected and send copy of references which will be treated confidentially.—Apply Box 110, Pulp and Paper Magazine, 45 St. Alexander Street, Montreal.

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Alphabetical List of Advertisers

See Classified List on page 51

Unpaged advertisements appear in every other issue

A	
Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	96

B	
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6

C	
Caldwell, H. W. & Son Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Company, Ltd.....	10
Capital Wire Cloth Mfg. Co. Ltd.....	7
Carthage Machine Co.....	7
Chambers, Ltd.....	67
Chicoutimi Pulp Co.....	68
China Clay Co.....	62
Christie George, Ltd.....	13
Churchill & Sim.....	65
Crookes, Roberts & Co.....	65
Crossley T. L.....	65

D	
DeCew, J. A.....	65
Dean & Son.....	65
Dominion Belting Co.....	54
Dominion Pulp Woods Limits.....	65
Dunlop, Wm. M.....	65

E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	61
Emerson Mfg. Co.....	9

F	
Farrel Foundry & Machine Co.....	11
J. Ford & Company.....	

G	
Glens Falls Machine Works.....	

H	
Hamilton, Wm., Co., Ltd.....	14
Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	65
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg Co.....	13
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson Chas.....	4
Jones, E. D. & Sons. Co.....	17
Jones & Glassco.....	6

K	
Klipstein, A. & Co., Ltd.....	7

L	
Lauderburn, D. E.....	64
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	8

M	
Marx, J & C.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15
McIntyre & Hinzke.....	64

N	
National Paper Co.....	63
Northern Crane Works Ltd.....	66
Norwood Engineering Co. of Can Ltd.....	66

O	
Ontario Pulp Wood Limits.....	67
Ottawa Car Mfg. Co., Ltd.....	9

P	
Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Prestons Digester Lining Co., Ltd.....	16
Process Engineers, Ltd.....	65
Provincial Paper Mills Co. Ltd.....	61
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R	
Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co. Ltd.....	66

S	
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schaeffer & Budenberg Mfg. Co.....	6
Schlick, Leo.....	64
Scott, Ernest & Co.....	62
Sherbrooke Machinery Co., Ltd.....	5
Smart Turner Machine Co.....	68
Smith, S Morgan Co.....	
Snell, Samuel Co.....	13
Spencer, J. H. & Sons.....	68
Stancliffe Estates Co., Ltd.....	64
Stebbins Engineering & Mfg. Co.....	64

T	
Taylor, J. A.....	62
Ticonderoga Machine Works.....	13
Tippet, Arthur P. & Co.....	13

U	
Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	
Westbye, P. P.....	
Wilson-Paterson Co.....	
Winn & Holland.....	

England's embargo, further advances are expected in this market.

Waste papers are very active on account of the rush for substitutes for chemical pulps and for rags. Hard white shavings have advanced to 2.75c, while soft white are being held for 2.25c. Old krafts are selling as high as 2c. This grade is scarce, and in good demand. Even ledger stock is moving well. Mixed papers are quoted as high as 45c.

The paper market is very active. Demand for all papers is remarkable, the chief trouble being the difficulty in placing orders. In some grades, mills are so rushed that they are refusing business, while the others are holding firm to the advanced prices. Much trouble is still being experienced on account of the railroad embargoes on freight. While this situation has eased a bit, matters are still very annoying. News-print continues moving actively, and prices are inclining upwards. The market is actually ready to advance considerably, but is being withheld by the paper makers, who fear that higher prices may encourage some of the publishers to get "mad" and invest in some of the proposed tidewater projects. Tissues are firm and brisk. Krafts are quoted as high as 5½c., and can almost not be had. Manilas and fibres are selling well and advancing. Boards are in good demand.

The following quotations are purely nominal:—

Pulpa.

Ground Wood, No. 1, \$16 to \$17, delivered.
Ground Wood, No. 2, \$14.50 to \$15.50, delivered.
Unbleached Sulphite, dom., 2.50c to 2.85c, delivered.
Easy bleaching impt., 2.85 to 3.25c, ex-dock, N.Y.
Bleached Sulphate, impt., 2.80c to 2.90c, ex-dock, N.Y.
Bleached Sulphite, impt., 4¼ to 5½c., ex-dock, N.Y.
Unbleached Sulphite, impt., 2.50 to 3.00c., ex-dock, New York.
Bleached Sulphate, impt., 2.80c to 3.00c., ex-dock, N.Y.
Kraft Pulp, impt., 3 to 3½c.

Paper.

News, Rolls, transient business, \$2.10 to \$2.25.
News, Sheets, \$2.30 to \$2.45, f.o.b.
News, Rolls, contract renewals, \$2.10 to \$2.20, f.o.b.
News, side runs, \$2.00 to \$2.15, f.o.b.
Book papers, car lots, S. & S.C., \$45 to \$46 f.o.b.
Writing paper, extra superfine, 14c. to 17c., del. east of Miss. River.
Writing paper, superfine, 12c to 13c., del. east Miss R.
Writing paper, No. 1 fine, 9½c, del. east Miss River.
Writing paper, No. 2, fine, 8½c, del. east Miss River.
Writing paper, engine sized, 6 to 9c, east Miss. R.
Bond paper, 5½c to 24c, delivered east of Miss. R.
Ledger paper, 5½c to 25c, delivered east of Miss R.
Linen paper, 9c to 18c, delivered east of Miss River.
Manila jute, 4¾c to 5c, delivered.
Manila, wood, 2.50 to 4c, delivered.
Kraft, No. 1 (dom.), 3.75 to 5½c. f.o.b., New York.
Kraft, No. 2, (dom.), 3.45 to 3.75c, f.o.b., New York.
Kraft, imported, 3.95c to 5½c, ex dock, New York.
Boxboards, news, \$29.00 per ton, delivered.
Wood pulp board, \$40 to \$42.50 per ton, delivered.
Boxboards, straw, \$27.00 per ton, delivered.
Boxboards, chip, \$26.00 per ton delivered.
Tissue, fourdrinier, 50c. f.o.b. New York.
Tissue, white, cylinder, 47½ to 50c, f.o.b., New York.

CANADIAN MARKETS

The prospects for the coming year are good in all lines, but the fly in the ointment is the growing cost and scarcity of raw materials, and the seriousness of the color situation. The demand for news print continues strong, and prices are firm. It is possible that one or two mills may put in more machines.

Book and writing plants are well employed. One mill during the past week advanced all light tints three-quarters of a cent per pound over whites, owing to the scarcity of dye stuffs. In dark colors, such as russets, golden rods and deep blues there has been an increase of two cents per pound over whites.

Another large firm in writing their customers, say that, in figuring on heavy orders, it is advisable to get prices before giving quotations, and when colors are required to get samples, as "we cannot guarantee to even match standard shades."

The ground wood market is improving steadily, while the price of sulphite is strengthening all the time, and the coming year will see a greatly increased production of sulphite pulp, especially bleached, in Canada. There has been a recent stiffening in the price of fibre and manila papers, while jobbers have made a slight advance on kraft.

January was a rather quiet month, as it usually is, and advantage was taken of it to do general stock-taking, and to clear out unprofitable lines. February is looming up well, and the prospects for a good spring's business are very bright. It is felt that the business in all lines of the pulp and paper trade will be better during 1916 than for many years, owing to the excellent business conditions across the border, and the increasingly large number of inquiries from paper firms in practically all quarters of the globe, all of whom have their eyes on Canada.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) \$1.95 to \$2.05 at mill, in carload lots.
News (sheets), \$2.15 to \$2.30 at mill, in carload lots.
Book papers (ton lots), 4.25c. up.
Book papers (carload), No. 3, 4.00c to 4.25c.
Book papers (carload), No. 2, 4.50c.
Book papers (ton lots), No. 2, 4.75c to 5.50c.
Book papers (carload) No. 1, 5.00c to 5.50c.
Book papers (ton lots), No. 1, 5.50c up.
Sulphite bonds, 6½ to 8c.
Writings, 4½c up.
Grey Browns, \$2.35 to \$2.75.
Fibre, \$3.75 to \$4.75.
Manila, B., \$2.85 to \$3.50.
Manila, No. 2, \$3.25 to \$3.75.
Manila No. 1, \$3.75 to \$4.75.
Unglazed Kraft, \$4.25 to \$5.50.
Glazed Kraft, \$5.00 to \$6.00.

Pulp.

Ground wood pulp (at mill), \$16 to \$17.
Ground wood \$19 to \$23, delivered.
Sulphite (unbleached), \$52 to \$54, del. in Canada.
Sulphite (unbleached), \$52 to \$55, delivered in U.S.
Sulphite (bleached), delivered, \$70 up.
Sulphate, delivered, \$50 to \$52.

Paper Stock.

White envelope cuttings, \$2.15.
No. 1 soft white shavings, \$1.95.
White blanks, \$1.05.
No. 1 book stock, 95c.
No. 2 book stock, 65c, nominal.

Ordinary ledger stock, \$1.30.
 Heavy ledger stock, \$1.65.
 No. 1 Manila envelope cuttings, \$1.20.
 No. 1 print Manilas, 70c.
 Folded News, 45c.
 Over issues, 50c.
 No. 1 cleaned mixed paper, 37½c.
 Old white cotton, \$3.00.
 No. 1 white shirt cuttings, \$5.50.
 Black overall cuttings, \$1.85.
 Thirds, blues, \$1.70.
 Black linings, \$1.75.
 New linings flannelettes, \$4.00.
 Ordinary satinets, \$1.60.
 Flock, \$1.70.
 Tailor rags, \$1.60.
 Blue overall cuttings, \$4.00.
 Manila rope, \$2.75.
 No. 1 burlap bagging, \$1.60.

* * *

Quotations f.o.b. Montreal are as follows:—

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$50 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders; \$55 to \$60 per ton for small orders.
 No. 1 Book, 5¾c to 6c.
 No. 2 Book, S.C., \$4.75 in large quantities; \$4.85 to \$5.50 in small quantities.
 No. 3 Book, M.F., \$4.25 in large quantities; \$4.75 in small quantities.
 Writings, 5½ to 7½c.
 Sulphite Bond, 6½c to 8½c.
 Writing Manila, 5c to 5½c.
 Cover Papers 6½ to 10c. per lb.
 Colored Posters, 4¾ to 5¼c.

* * *

Prices on wrappings now in effect:—

	Carload & Jobbers.	Five tons.	Two tons.	One ton.	Under 1 ton.
Cleaver, per 100 lbs.	2.35	2.45	2.55	2.65	2.75
B. Manila, do.	2.75	2.95	3.05	3.15	3.25
Samson B., do.	3.35	3.45	3.55	3.65	3.75
No. 1 Manila, do.	3.75	3.85	3.95	4.05	4.15
No. 2 Manila, do.	3.10	3.20	3.30	3.40	3.50
Invincible Striped Man., do.,	3.75	3.85	3.95	4.05	4.15
Fibre	3.75	3.85	3.95	4.05	4.15
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.					

	One ton.	Half ton.	Small lots.
Plain Kraft	4.65	5.00	5.25
Glazed Brown Kraft—½c per lb. over price for Plain Kraft.			5.50
Glazed Green Kraft—½c. per lb. over price for Brown Kraft.			

These prices on Kraft are for deliveries in Montreal, Sherbrooke, Three Rivers and Bromptonville, or freight equalized on any of these points.

Booking orders.—No orders or contracts are to be taken for shipment beyond thirty days of date of order or contract.

No. 2 Manila is to be withdrawn from the market, so that after the present stocks are exhausted this grade of wrapping cannot be obtained, that present stocks are to be sold at the advanced prices.

Pulp.

Sulphite easy bleaching, \$43 to \$45 per ton.
 News quality, \$39 to \$40 per ton.
 Bleached sulphite, \$54 to \$59 per ton.
 Ground wood, \$20 to \$23, delivered in United States.
 Kraft Pulp, \$39 to \$40.

NEW SULPHITE MILL AT THOROLD.

According to the St. Catharines Standard, the Ontario Paper Company, Limited, of Thorold, will erect a sulphite mill in the early spring. It will have a capacity of fifty tons per 24 hours, and there will be two digesters, each 15 feet in diameter by 49 feet in height. The contracts for these have been let to the Chicago Bridge and Iron Works, which will build them at their plant at Bridgeburg.

The new sulphite mill will be all steel, concrete and brick construction. It has been understood for some time that the Ontario Paper Co. intended adding another Fourdrinier machine, but it is not likely that anything will be done this year in this direction, as the attention of the company and its manager, Warren Curtis, Jr., will be fully occupied in connection with the sulphite extension.

PRINTING PAPER REQUIRED IN SIBERIA.

United States Consul-General John H. Snodgrass, at Moscow, says "the investment of capital in the paper industry in Siberia promises large profits."

If any manufacturers of printing paper are desirous of making a great deal of money in a short time, let them set up paper mills in Siberia. The war has cut short the supply of paper in that immense territory, says official advices, and the people are bending every energy toward establishing paper mills of their own. They lack capital, to some extent, and it is understood would welcome with loud acclaim money and experience from the outside.

All of the Siberian newspapers, fifty in number, it is pointed out, are suffering from the great scarcity of paper.

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The International Land and Lumber Co., Ltd., of Ottawa, owns an area of 300 square miles of spruce limits of the finest quality in the neighborhood of Lake St. John, P.Q., and propose erecting a saw mill and a pulp mill on the site as soon as the necessary capital can be obtained.

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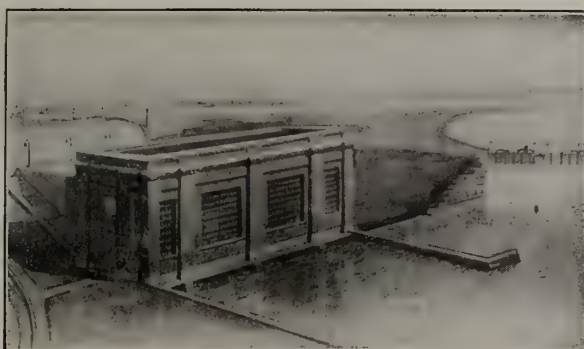




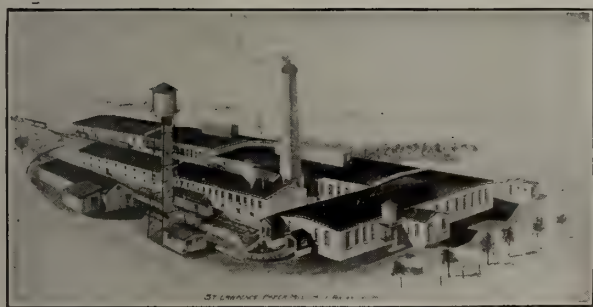
Barber Paper Mill, Georgetown, Ont.



Montrose Paper Mill, Thorold, Ont.



Montrose Power Plant, Merritton, Ont.



St. Lawrence Paper Mill, Mille Roches, Ont.



Barber Coating Mill, Georgetown, Ont.

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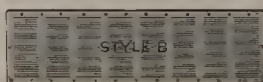
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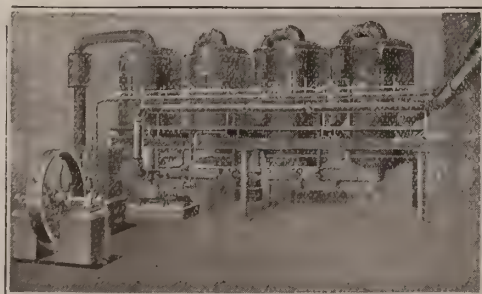
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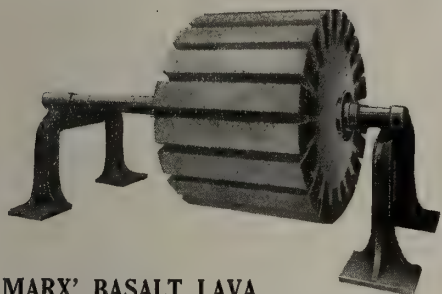
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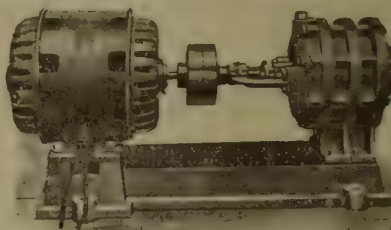


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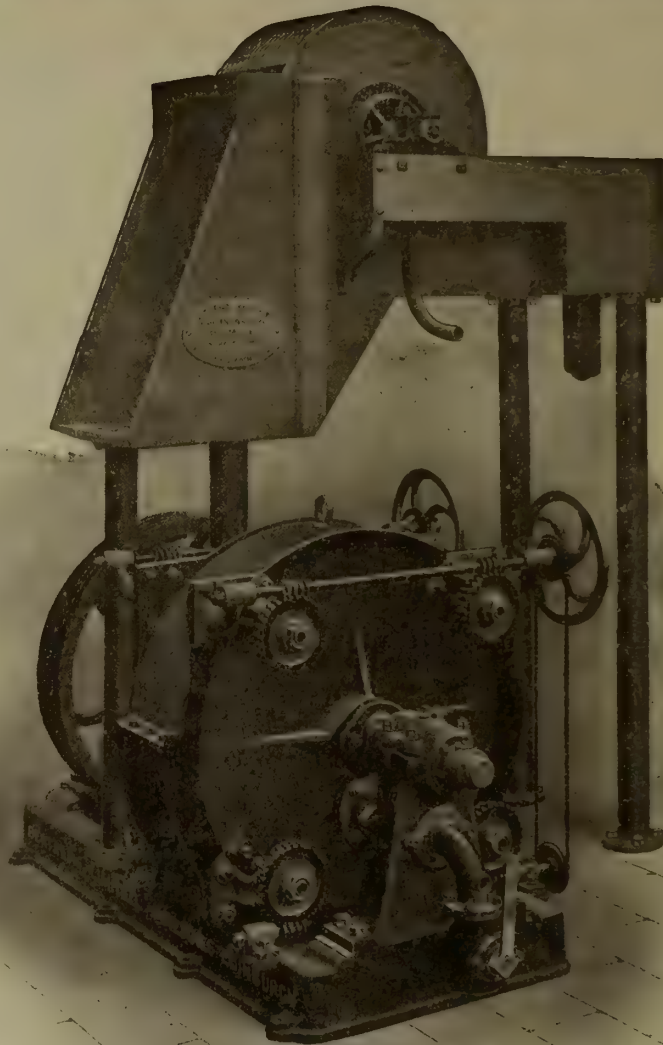
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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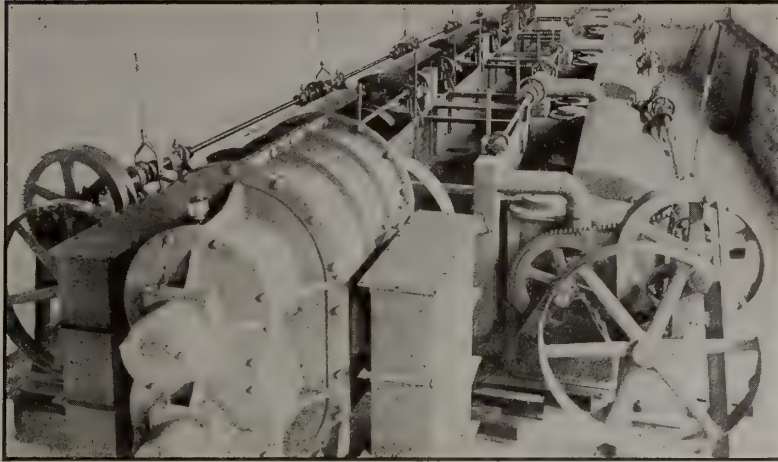
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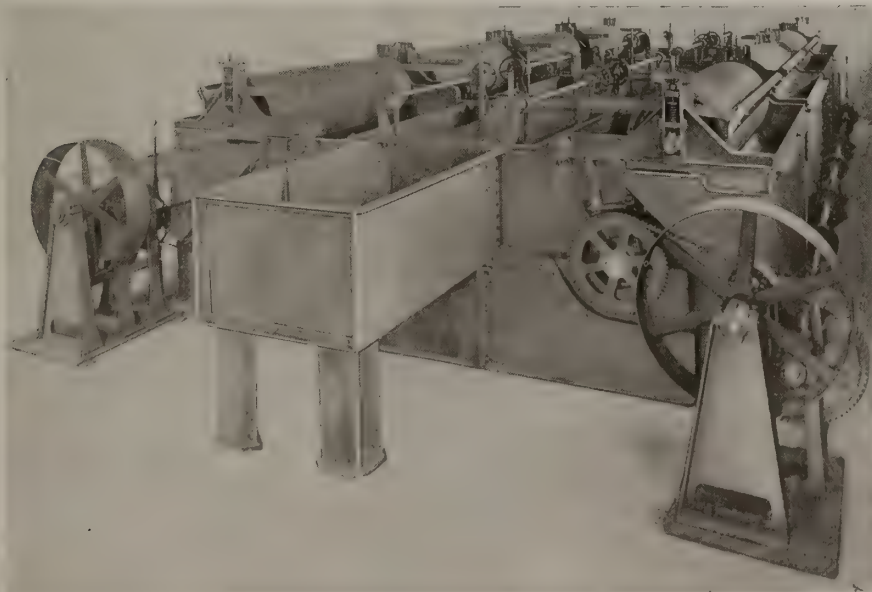
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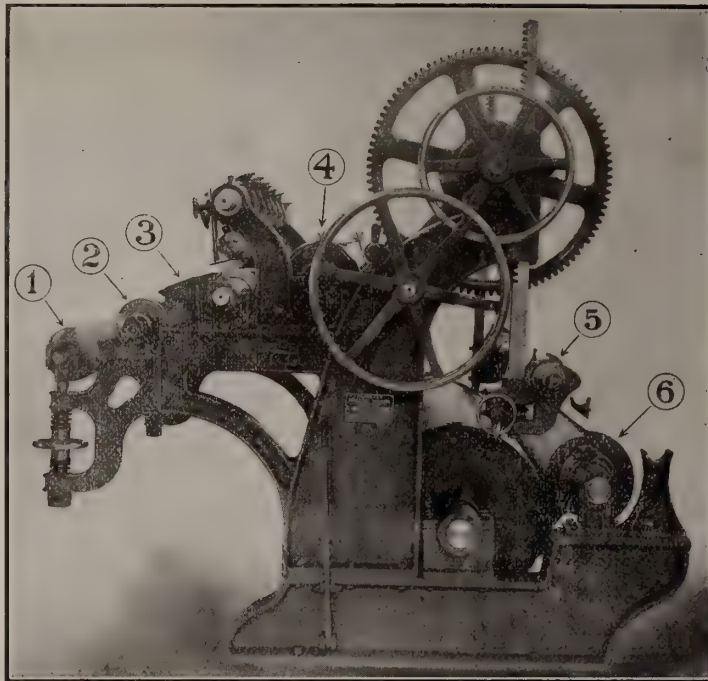
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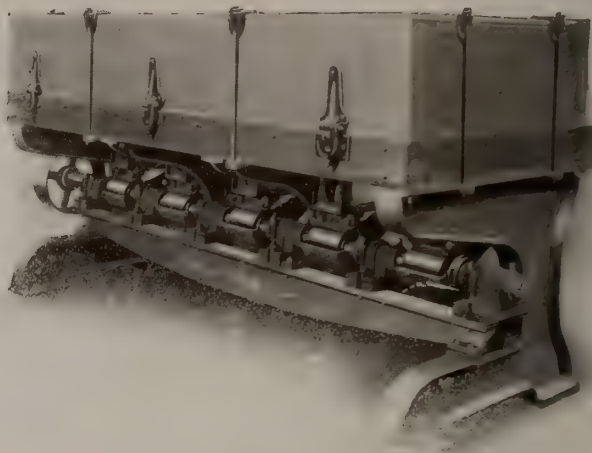
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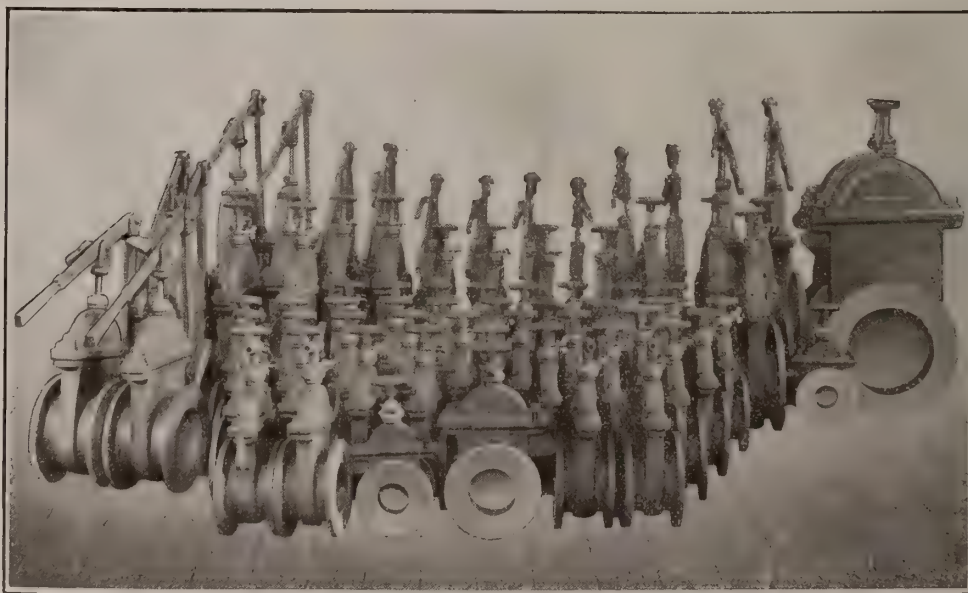


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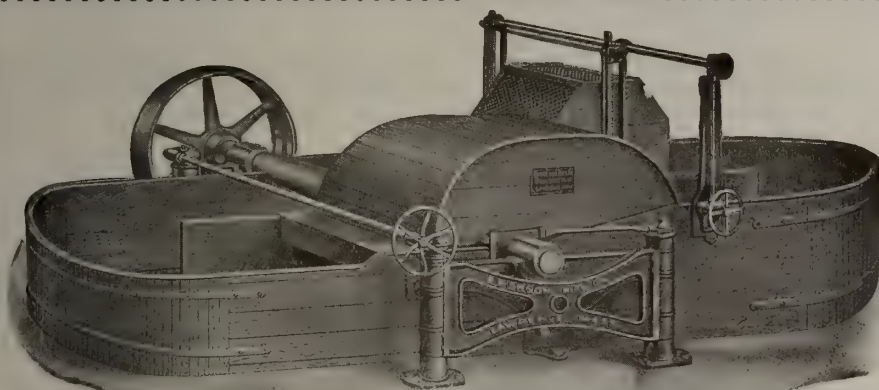
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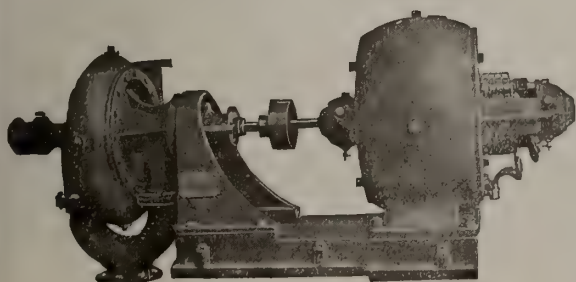
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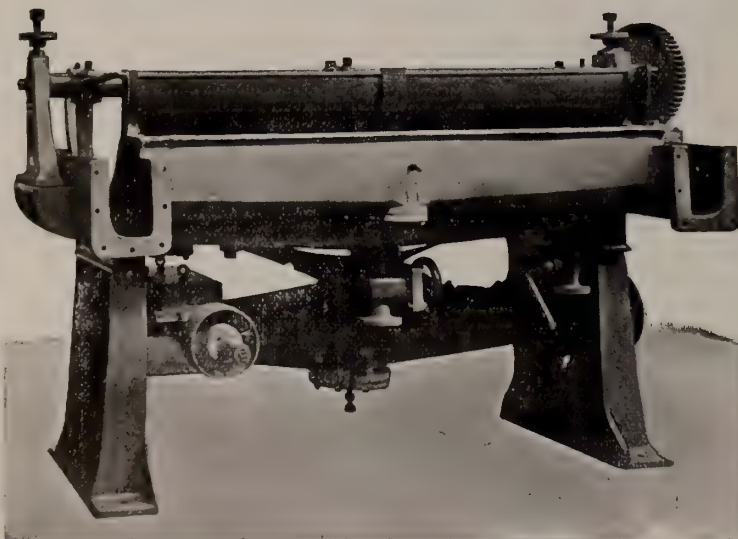
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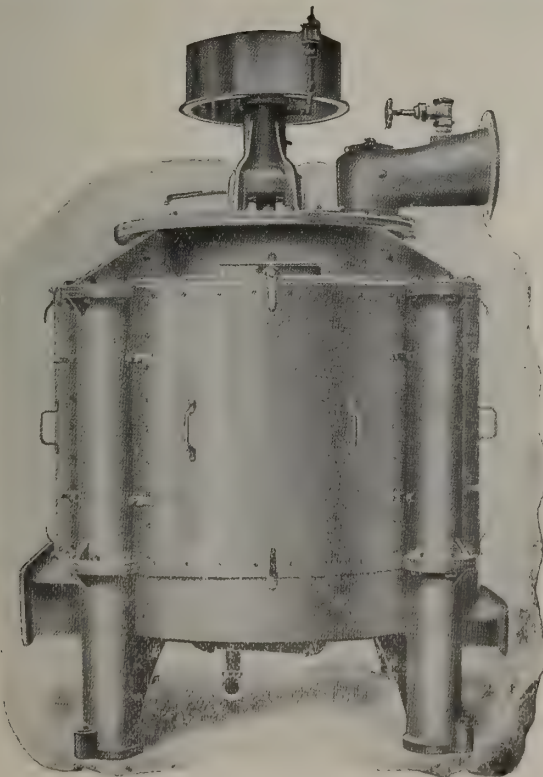
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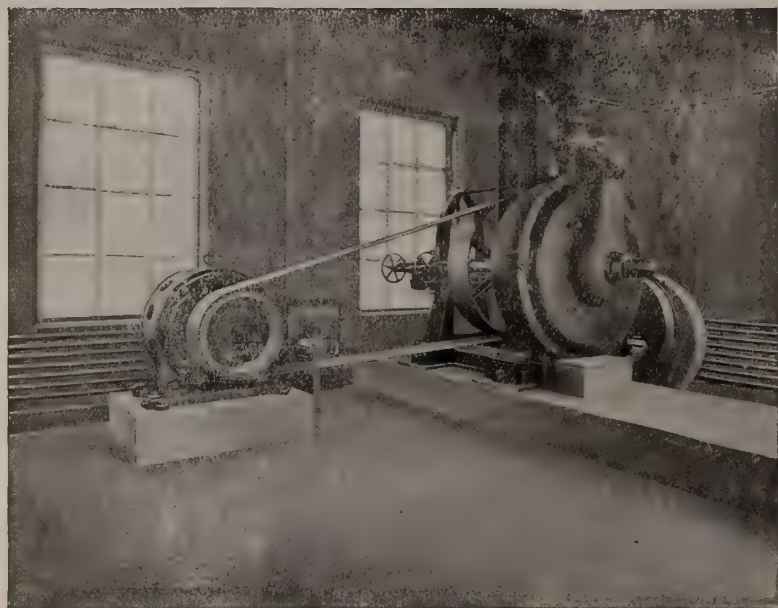
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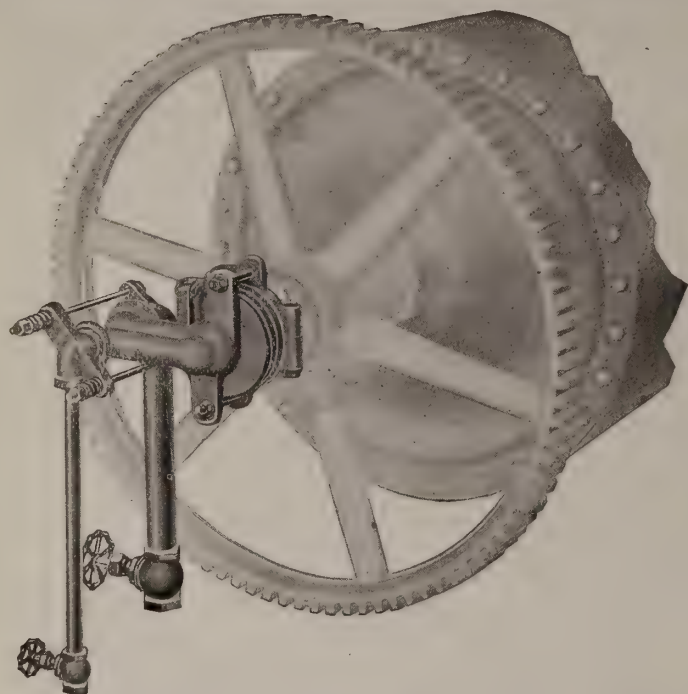
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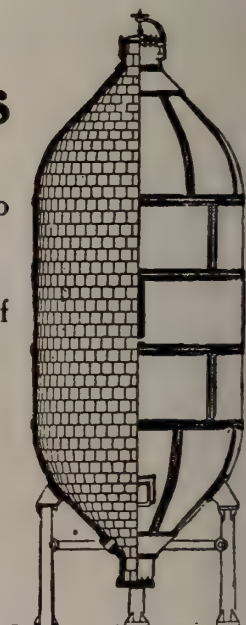
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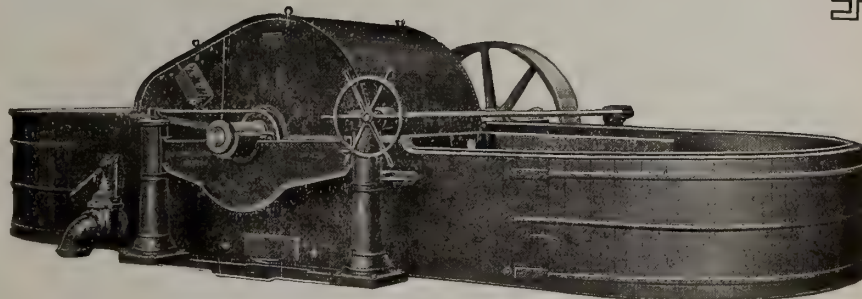
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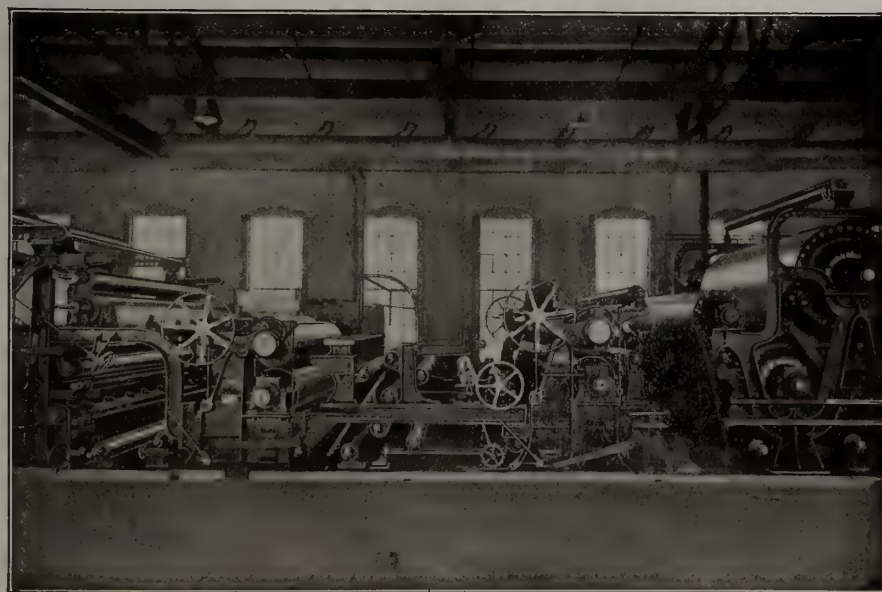
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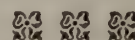
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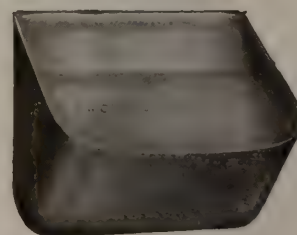
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Pulp and Paper Magazine

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
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VOL. XIII.

MONTREAL, MARCH 1st, 1916

No. 5

STRENGTHENING THE BONDS.

No feature of the recent meeting of the American Paper and Pulp Association in New York could be more pleasing to pulp and paper manufacturers of the United States and Canada than the vigorous statements of President Frank L. Moore voicing the sentiment that unity and cooperation between manufacturers on either side of the boundary should be developed and maintained.

President Moore said in part:

Gentlemen, we still have work to do. Last week I attended the annual meeting of the Canadian Paper and Pulp Association in Montreal. It was a real pleasure to me to be there, and I learned a lesson there which I want to bring back to you. That is this, that the Canadian association has in its membership 95 per cent. of the manufacturers of paper and pulp in Canada. Are you going to help us during the coming year to increase the membership of this association so that a year from now we can make a similar showing?

That organization, while yet an infant, being only three years old, is very active. As I said, 95 per cent. of the paper and pulp manufacturers of Canada are enrolled in it. The president, John A. Acer, who I am sorry to say is unable to be present tonight, told me that he hopes for closer relations and closer cooperation with the American Paper and Pulp Association. (Applause). That shows to me that the Canadian manufacturer has confidence in what we are trying to do. They want our market; they want our coal. We want their paper and their wood. Our interests are mutual, and, with the sentiment that prevails today on the part of the officers of that association, I think we are going to combine for mutual good. I was more impressed than I can tell you with the loyalty that was manifested at that meeting, and if it was next week I was invited to go

there instead of last week, I am sure I would take back with me the same message to them which they gave me to bring here to you. (Applause).

President Moore may be assured that he speaks for interests in both countries. Largely speaking, pulp and paper manufacturing in America is a unit, and the closer manufacturers work to promote common interests the greater will be the benefits to all.

The Pulp and Paper Magazine would like to take this opportunity of congratulating the American Association on having had the sage counsel and vigorous efforts of Mr. Frank L. Moore during a period in his history in which a strong hand was needed, and to reciprocate, if it may be allowed, the expressions of comradeship which this worthy gentleman voiced before the largest gathering in the history of the pulp and paper industry.

AN EXPANDING INDUSTRY.

At no time in the history of the pulp and paper industry in Canada was business better than it is at the present time. It may be true that a few years ago there was a boom and a number of new companies were formed, but their inception was largely the work of promoters and speculators rather than a result of the natural expansion of the industry. Today however, business is improving as a result of increased demands.

There are nearly a dozen Canadian mills making additions to their plants, increasing their output or preparing to build new mills. A number of other companies are being formed for the purpose of building plants in Northern Ontario and Northern Quebec. A list of some of the more important extensions being planned at the present time follows:

The Riordon Pulp and Paper Company are making improvements to their plants at Hawkesbury and Mer-

ritton. The Belgo-Canadian Pulp and Paper Company at Shawinigan Falls are installing a new 202 inch machine which will increase their daily output to 185 tons. The St. Maurice Paper Company, Limited are building three mills at Cap Madeleine. The Union Bag Company at Three Rivers have installed two new machines with a capacity of 50 tons per day each, and the Laurentide Company with a new sulphite digester will shortly increase its sulphite production from 115 to 150 tons per day. The same company has increased its horse power from 30,000 to 40,000. In Toronto the Mettagami Pulp and Paper Company Limited are preparing plans for a new pulp and paper mill at Smooth Falls, Northern Ontario. In addition to these improvements and extensions, the Bathurst Lumber Company recently commenced to manufacture pulp and paper while the Abitibi Pulp and Power Company has only been in operation a few months. An excellent summary of the pulp and paper situation in Canada appeared in the last issue of the magazine and continues in the present and the next number.

The pulp and paper men throughout the Dominion realize that the present and the immediate future are big with possibilities and are preparing to make Canada the pulp and paper manufacturing centre of the North American Continent.

EXPERT TRADE PROBLEMS.

The Pulp and Paper Magazine is in receipt of a letter from a pulp and paper man in Italy, complaining of the unbusinesslike way in which Canadian pulp and paper men attempt to carry on export trade. The writer points out that most of the letters he receives from Canada have insufficient postage. This is probably a small matter but is very annoying to the man who is forced to pay at the other end. It is only a trifling affair for an exporter to familiarize himself with the amount of postage to be paid on foreign mail, but it is these little things that count in business.

Another complaint made was that Canadian paper men simply quoted what they believed the foreigners should have, instead of trying to adapt their output to his requirements. There is no use trying to force goods on people that they do not want. One of the secrets of Germany's remarkable success in extending her foreign trade was her willingness to make goods in conformity with the design and price required by various countries.

Canada has an excellent opportunity today to extend her foreign trade, not only in pulp and paper, but in many other lines of manufactured goods and it rests very largely with herself whether this trade shall assume reasonable proportions or not. If we ignore the requests and requirements of the foreigner and simply try to force him to take what we choose to turn out, we are bound to antagonize those with whom we attempt to do business and force them to deal elsewhere. On the other hand, if we show a disposition to meet them and adapt ourselves to their little peculiarities, there is no reason in the world why we can not build up an exten-

sive export business. Attention to little things always means a great deal, but especially so when your customer is five or ten thousand miles away from you.

INCREASED COST OF PAPERMAKING.

Papermakers are feeling the shortage of dyestuffs almost as keenly as are textile manufacturers. As a matter of fact, the production of colored paper on this continent has practically ceased and daily papers are taking on a more or less yellow hue, caused by the lack of bleach. Some dyes such as indanthrene blue, a German aniline product, which was formerly used extensively by manufacturers is no longer available, and domestic colors are substituted, but with only a moderate success. Practically all aniline dyes are now unobtainable and those that can be procured have advanced to abnormal figures. Bleach has also shown a marked advance. Before the war it was selling at \$28.50 a ton, but now paper manufacturers are paying \$330 a ton, an increase of more than 1,000 per cent. The reason for this abnormal advance is due to the fact that bleach is chlorine, which is used in the manufacture of explosives. Paper makers can not compete with powder makers and when they go into the market and bid for bleach, they have to pay accordingly.

The following table shows some of the percentage advances which have taken place in the various materials which go into the manufacture of paper. These advances made since the war commenced furnish abundant reasons why paper manufacturers would be justified in charging an increased price for their output.

The list follows:

Material:	P.C. Advance
Bleach	1,000
Dyestuffs	400 to 500
Caustic	100
Alkali	75
Alum	50
Bleached pulp	82
Unbleached pulp	37

BOY SCOUT FOREST BOOK.

The Canadian Forestry Association has presented sixteen thousand copies of the Boy Scout Forest Book to the Boy Scouts of Canada, as part of their educational propaganda for better forest protection.

In the thirty-two pages of text and illustration the boy is made acquainted with the Canadian forest as a personal and national necessity. The subject is handled from a new angle, and the young reader is given the business reasons for putting an end to our plague of forest fires.

THE DYE PROBLEM.

Famine of postage stamps and paper money threatens United States. Bureau of Engraving and Printing has supply of dyes on hand only sufficient to last to May 1. World markets have been ransacked without result.

Convention of the American Pulp and Paper Association

(Special to Pulp & Paper Magazine.)

New York, February 19, 1916.

The past week has witnessed one of the most enthusiastic gatherings of paper and pulp men ever recorded in the annals of the American paper industry. Fully one thousand manufacturers, jobbers and supply men were seen in the lobby of the Waldorf Astoria during the three day session. It can be truly said that the thirty-ninth annual convention of the American Pulp & Paper Association was the most remarkable in the history of the organization.

The gradual increase in the price of raw materials and the finished paper product gave food for many more interesting and vitally important topics for discussions. As a consequence the committee, or round table, meetings, reflected a tone of enthusiasm and optimism regarding the future.

Frank L. Moore has been an ardent worker for the association during his two years' reign as president. Though he refused the nomination for re-election, he consented to take the chair of vice-president. In discussing the convention, Mr. Moore said to your correspondent:

"I cannot remember a year in which there has been so many radical changes in the conditions of manufacturing, the increase in the costs and the advance in the price of manufactured articles. The increase in the selling of paper will vary from 3 to 40 per cent, according to the different grades."

Mr. Morris' annual report to the Association, in part, follows:

"Gentlemen,—We are assembled here in convention for our thirty-ninth annual meeting. It is customary at this time that your president make a report. I feel like taking for my text the words, "Nineteen-Fifteen," referring to the year just closed.

"Business of all kinds during the early part of the year 1915 was in a demoralized condition. Hardly any class of manufacturers was able to secure orders to keep their plants running full. Many of them sold goods at cost or below that they might be able to keep their employees employed full time at full pay. I cannot remember a year in which there has been such radical changes in the conditions of manufacturing, the increase in cost and the advance in the price of all manufactured articles. The following is a memorandum showing the percentage of increase in cost in various material which we have to buy. I have not figured this out to know what it will add to the cost per ton of paper, as these figures cover material going into all kinds of paper:

Rags, 9 per cent to 33 per cent.
Old papers, 11 per cent to 100 per cent.
Repair material, piping, etc., 25 per cent to 100 per cent.
Dyestuffs, 1,500 per cent to 2,000 per cent.
Chemical pulps, including kraft, bleached and unbleached sulphite, 33 per cent to 50 per cent.
Bleaching powder, 1,040 per cent.
Soda ash, 147 per cent.
Bituminous coal, 131 per cent.

Common labor, 40 per cent to 70 per cent.

Mechanics, 300 per cent.

Felts, 10 per cent.

Wires, 33 per cent.

Screen plates, 25 per cent.

Brass castings and material, 90 per cent.

"A year ago I said that the past year would be the reconstruction period of this association. That prophecy has partly been fulfilled. While we have been adding to the association, one group of manufacturers—as a group—has seen fit to withdraw its support. From information I have received I believe that many of the news manufacturers of the United States will become members of this association as individuals instead of through their news association. I have asked and invited criticisms of the manner in which our work has been conducted and have asked for suggestions as to what we could do which would tend to give you better service.

"I have already touched briefly upon the open price proposition, but I wish to say just a word more, and that is this, I am becoming a firm believer in publicity of this kind. I think it should be one of the duties of the association this coming year to follow closely the activities of other organizations in regard to the open price agreement. I know that during the past year many groups of manufacturers have been gradually adopting this plan in the conduct of their business, and that they have been surprised at the results obtained. Many of the manufacturers of wrapping papers have adopted this plan of sending out price lists that are open to the inspection of everyone. This has had a stabilizing influence, inasmuch as it shows to the small manufacturer—and he who has always been suspicious of others—that if he has this information he can more intelligently market his own product. The day for large corporations to unduly depress prices, and drive the small manufacturer out of business, and then unduly inflate prices, has passed. Methods of this kind were what brought about the restraining influence of our government toward business."

President Moore's report then touched briefly on Compensation Insurance, the relation of the Association with the Federal Trade Commission, the situation and possibilities of foreign trade, and labor conditions. The report also told about the value of the weekly letter on the paper and pulp market, and the organization of the various divisions of the Association.

"A year ago," continues the report, "there was organized the Technical Division, which takes in—as, I might say—'The man behind the gun'—and has in its membership men from all divisions—the engineers, the chemists, the superintendents, the practical men, as well as officers of many companies. Its membership has largely increased—the dues are small and this division should have some financial support from the parent organization."

In concluding, Mr. Moore summarized some of the

activities which he thinks should be carried out during the ensuing year. These activities follow:

1. Particular attention and support should be given to the Technical Section. This, I believe, is one of the most important sections of our organization.

2. We should follow closely the suggestions that will be made by the paper section of the National Safety Council. The suggestions from this organization are considered of a great deal of value by those who know the work it is doing. It should be of interest to all.

3. We shall follow closely the work of the foreign trade department of the Department of Commerce. I expect that we will be asked soon to name a person to represent the paper industry in a trip to South America, the expense to be borne by the Department of Commerce.



MR. ARTHUR B. DANIELS,

the new president of the American Paper and Pulp Association.

4. The import information of chemicals, pulp, paper, colors, etc., should be continued.

5. We should have reports from various sections of the country concerning water conditions and lumbering conditions so that this information can be given out in our weekly letter.

6. The open price proposition should receive very serious consideration.

7. Particular attention should be given the question of a uniform cost accounting for all mills by the executive council. The Federal Trade Commission will ask us to adopt some system of uniform cost accounting. We have already told them we will give them all the assistance we could when requested.

8. We should follow closely all legislation pertaining to tariff matters or other national legislation affecting our industry and report to the executive council and such information as they desire to be given to our members to be sent out through a weekly letter.

9. Dye situation. We should follow closely the dye

situation not only as it relates to the manufacture of dyes in this country, but also as to the possibility of importing dyes.

10. We should do all that can possibly be done toward the establishment of a Permanent Tariff Commission.

11. We should follow closely the laws on compensation and insurance as adopted by the various States and use our influence to have them more uniform. Also the proposed laws on occupational diseases should receive our serious consideration.

12. We should follow up the work already started toward obtaining the various forms and blanks which the various State governments and the National Government send us for information concerning our business, to the end that these may be standardied, thereby reducing the amount of work imposed upon each one of you and suggesting blanks that will give intelligent information.

13. We should keep in very close touch, as we have been doing, with the Federal Trade Commission, particularly at the present time, as to what the attitude of the Government will be in relation to dumping after the war.

14. Weekly letter. Particular attention should be given to the weekly letter.

15. If the budget permitted, the work of your Association could be very much broadened, but we have been trying to give value received for the money which you have given us to work with.

16. We should cultivate a closer relationship with the Canadian Paper and Pulp Association. I attended their annual meeting last week, and I know that they would welcome anything of this kind.

17. We should follow as closely as possible the market conditions of pulp and paper throughout the world and give you this information through a weekly letter.

The meeting Thursday morning of the Mechanical and Chemical Pulp Division brought about some surprising changes. The activities of this branch of the Association have become so important that it has been found necessary to become a distinct integral body of the parent organization. To make this change possible the division was dissolved and the Pulp Manufacturers Association was organized with Maury L. Freeman as secretary, who for the past year has been acting as secretary to the division. Under the new arrangement he will devote his full time to the Pulp Manufacturers' Association. The new body will welcome the Canadian Manufacturers and enlist their support. The Association hopes soon to be the representative pulp organization of North America.

Chairman E. W. Kiefer, of the Port Huron Paper Co., presented the following report on the pulp situation:

Gentlemen,—For six months we have been experiencing a normal market on chemical pulps. This experience is so new to us that I fear many of us were inclined to think that a shortage existed, but as I look around I can find no evidences of mills being shut down for want of pulp, and am forced to the conclusion that there is no lack of pulp in America, our importing friends to the contrary, notwithstanding.

Importations of the foreign unbleached for 1915 were about the same as 1913, and less than 1914, which saw such an enormous amount brought in that it took half of 1915 to work it off.

The imports on bleached pulp have decreased quite markedly, and in consequence the domestic bleached is in good demand.

Shipments of domestic bleached and unbleached pulp have for the first time in a good many years equalled the amount imported, and is bearing out the prophecy made a year ago that domestic manufacturers could supply the market requirements.

However, I wish to remind you that we are still shipping much less than we were ten years ago, and it looks as if some of the unfair competition and discrimination might be done away with, so that the domestic manufacturer, after being nearly driven from the market, might be put in a position to compete for the American market on equal terms with his European competitor.

I know if this happens, and we are working hard to make it happen, that you will show that you can again take care of the American market, and that our answer to the foreign cry that we are unprepared to supply our own market will be such shipments of pulp as we used to record fifteen years ago.

With the world's largest pulp wood supply, great waterways, and an ample market at a living price, Canadian and American manufacturers together will show that they can compete with the foreigner if giv-

fruitful of results than the one just past, which necessarily has been largely given to preparatory work.

Report of Ground Wood Committee.

D. L. Bellinger, chairman of the Ground Wood Committee, read the following report:

It is generally believed that one of the proper labors of the Technical Section is to standardize, so far as is practicable, as many of the manufacturing methods as may properly be referred to a standard specification. The ground wood mill seems to offer less opportunity for standardization than some of the other departments.

There are, however, a number of subjects which may properly be considered under this head, and your committee will therefore make a few suggestions.

1. The Comparative Value of Wood Prepared by Different Methods.

In fixing a value for pulp wood, it is customary to take as a basis of comparison the price of a cord of wood rossed on an ordinary flat disc barker. Such wood is necessarily straight, and piles more closely than wood prepared by any other method. Custom has established a correction to be applied to this figure when peeled wood is purchased. During the recent past, wood has been prepared by several methods which should give net quantities differing materially from both the above.

It seems advisable to your committee that there should be established as soon as possible a standard of comparison between the value of rossed wood and wood cleaned by the new processes.

We realize that this is a matter which equally interests our friends in the sulphite mills; but we would point out that the value of wood cleaned by some types of barking drums is not the same in sulphite and ground wood mills. There is more or less slivering of the sides and ends of sticks so prepared. In the pulp grinder these are simply rubbed off and appear in the stock as large slivers which in most mills are a total loss. We understand that in the sulphite mill they may be taken out of the good chips by a special screen, and cooked separately, the resulting sulphite being marketable for some uses.

Some of the ground wood men have kindly assisted us by mentioning some of the points on which they would like information. They are appended in the following four direct questions.

1. What is the peculiarity of basalt lava stone which makes it suitable for beater rolls and refiner stones to the exclusion of all other abrasives? What is known about the merits of such stone from different localities? Has anyone used lava stone quarried in the United States?

2. What is the proper depth to submerge the grinder stone in pulp while grinding to produce the best results, both in quantity and quality?

3. What is the proper temperature for ground wood coming from grinder, grinding green wood and also dry—product to be used for newsprint machine?

4. How can free stock be eliminated in hot weather and still maintain production from the grinders?

5. Where is the proper place to discharge water in the grinder pit—directly on the stone from shower pipe or in the pulp beneath the stone?

News Print Report.

Another report that was enthusiastically received was that presented by G. F. Steele on the news print



Mr. A. D. HUFF,

Traffic Expert of the Laurentide Company whose efforts in connection with the proposed freight rate increase have been of the utmost value to the Canadian Pulp and Paper Association.

en an equal opportunity to do so, and are not only ready and willing to live up to the fullest of their opportunity, but are prepared to again take their place as one of America's principal industries.

In conclusion, I wish to thank you for your loyal support to the division and to the association, and trust that our work for the coming year will be more

situation. Though Mr. Steele, who is secretary of the American News Print Manufacturers' Association, discussed the news print situation pretty thoroughly at the annual convention of the Canadian Pulp and Paper Manufacturers' Association several weeks ago (recorded in the last issue of the Pulp and Paper Magazine), his report at this convention covers many more vital topics.

Secretary's Report.

The report of A. D. Naylor, secretary of the Association, showed that at the close of the fiscal year, Jan. 31, 1916, there were 246 members of the Association, and 205 members of the Technical Section. The membership of the Association is made up of the following divisions:

Board Division	28
Cover Paper Manufacturers Association	19
Glazed and Fancy Paper Association	11
Mechanical and Chemical Pulp Division	22
News Print Manufacturers' Association	47
Specialties Division	8
Tissue Paper Manufacturers' Association	27
Wrapping Paper Division	49



GEORGE H. MEAD,

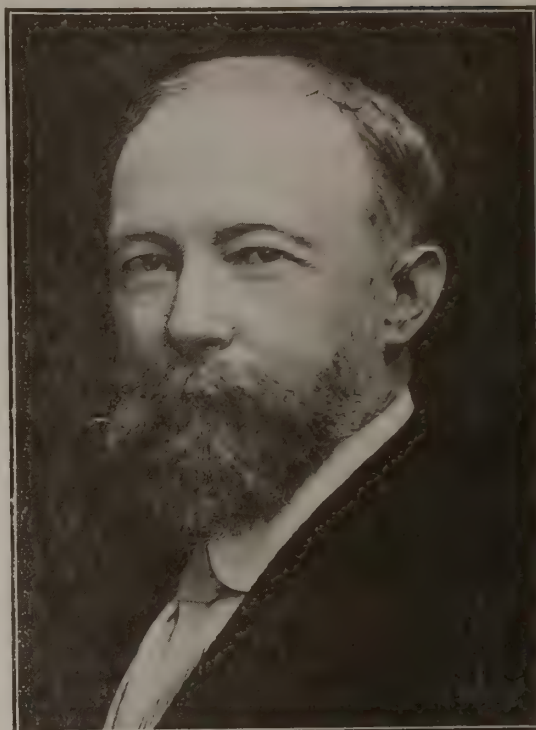
President Spanish River Pulp and Paper Company.

Writing Paper Manufacturers' Association . . 35

Many other important reports and papers were read, but space forbids citing them all. Altogether the 1916 Convention was pronounced a success in every sense of the word, and at the twelfth hour, when the curtain was lowered (Thursday night, at the banquet), 937 paper men filed out through the doors of the banquet hall—each enthusiastic and optimistic over the prospects for the ensuing year.

LIMITING BRITISH PAPER IMPORTS.

Regulations regarding the importation of paper and paper-making materials just issued by the Royal Commission appointed by the British Board of Trade, prohibit the importation of those articles from March 1, by any one except licensed persons. Licenses may be granted to paper-makers to import during the twelve months beginning with that date articles to the amount of two-thirds of the weight of the imported materials they consumed in 1914.



CHARLES LATHROP PACK,

Of Lakewood, N.J., elected President of the American Forestry Association at the recent meeting Held in Boston.

PULP AND PAPER NOTES

The Danish Government had prohibited the exportation of wood pulp and heavy paper.

The Crown Lands Department of Nova Scotia reports a total of approximately 13,000 acres burned over by forest fires during 1915.

The New York and Pennsylvania Co. have over 1,000 carloads of pulpwood piled at the sidings along the T. & N. O. and unable to get cars to take it away.

The Belgo-Canadian Pulp & Paper Company are installing a new 202-inch machine and it is expected to be in operation the end of this month. The output of the company will then be increased to about 185 tons daily.

The Geo. A. Fuller Company, Limited, Montreal, have obtained a contract for the construction of three mills for the St. Maurice, Limited, at Cap Madeleine, P. Q. The Company is a subsidiary of the Union Bag and Paper Company, Hudson Falls, N. Y.

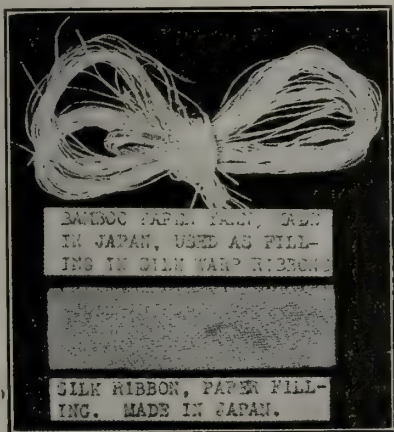
The Riordon Pulp & Paper Company will shortly have an average output of 200 tons per day. Improvements are being made to their plant at Hawkesbury, Ont., which will add to their production 10 tons per day, and at Merriton they will install an electrolytic bleaching plant.

The latest lumber company to engage the services of a professional forester is J. B. Snowball & Co., Ltd., Chatham, N. B. This company has employed Mr. J. R. Gareau, a graduate of the Quebec forest school, Laval University, to have general supervision over the woods on the company's limits.

Review of the Paper Textile Industry

In recent years the manufacture of paper textiles has made a notable advance. The idea is not new. From time immemorial the Chinese and Japanese have employed paper in forming rope with which to tie bales and packages and as fine yarn, used for weaving purposes. Even today in Hong Kong it is not unusual for a Chinese merchant to twist a strip of paper to tie a bundle for his Celestial customer.

In the United States after the Civil War, during the memorable cotton famine period, more or less successful attempts were made to produce paper twines, but this industry was gradually eliminated with the re-



turn of a normal supply of cotton, and with the exception of one mill, all these early attempts were abandoned. There is one successful mill in the south today which dates its beginning from this period.

Experiments with paper textiles have never ceased especially in England, Sweden and Germany. In 1892 two German engineers, Keller and Turk, produced the first truly commercial paper twisting machine, which was soon followed by another type by Claviez in 1897, and shortly after two other Germans, Muller and Kron, brought out still another twister. With these machines it was possible to develop the field on a commercial basis and insure its permanency.

Machinery No Longer a Novelty.

The paper twister today is no longer a novelty. There are at least a dozen different machines on the market, and two of them are of American make. The industry has grown steadily and in several countries has gained quite a notable success in various articles. Japan employs paper to a considerable extent as a filling in silk ribbons. England excels in heavy ropes and twines with other fibres as the core. Germany developed the bag and wrapping industry and at present, when jute is unobtainable, the paper yarn manufacturer is "the man of the hour," producing not only a substantial, but a cheap substitute.

In the United States an excellent line of floor coverings is being manufactured. There are a number of successful mills whose yearly output in all paper and wool coverings runs into the millions, and recently earnest attempts have been made to use this material for baggings and other articles where until now only jute has been used.

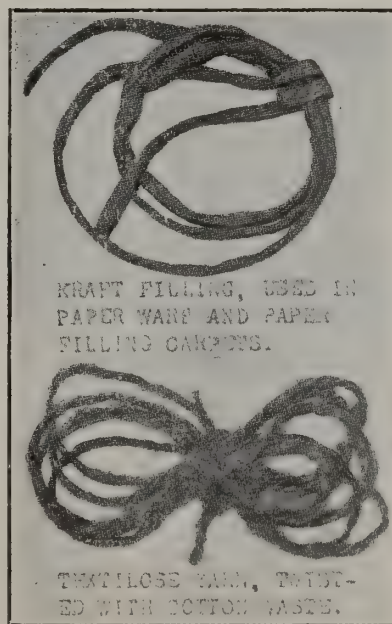
Manufacturing Processes.

The manufacturing process of paper yarns is similar on all types of machines, the raw material, paper, is cut into narrow strips varying from one-eighth of an inch to four or even five inches in width. In European countries, only the very best Swedish kraft is used, which has a strength that rivals other textile materials. Such stock is used in two of the American paper yarn mills. One Southern mill used an American made sulphite sheet for the heavier yarns, and lightweight tissue paper for the finer numbers. Two large carpet mills in Massachusetts and Pennsylvania use tissue paper almost entirely, while another mill in the Middle West has succeeded in making a satisfactory yarn from a very cheap paper stock, the twisting of which up to this time has been considered an impossibility.

Comparison With Other Materials.

Yarns made of tissue and other thin paper are twisted either dry or moist, while heavy paper must be carried through a moistening device, softening the strip to make it more pliable for twisting. The Kron method differs from this procedure in that the cutting of the narrow strips is done right on the paper-making machine, thence carried into rubbing aprons similar to the ones used in wool carding, condensed into a round silver, delivered in cans, kept in a moist condition, and then taken to the twister.

Universally moistening is done in a copper tank filled with water, behind the feed rolls to which various



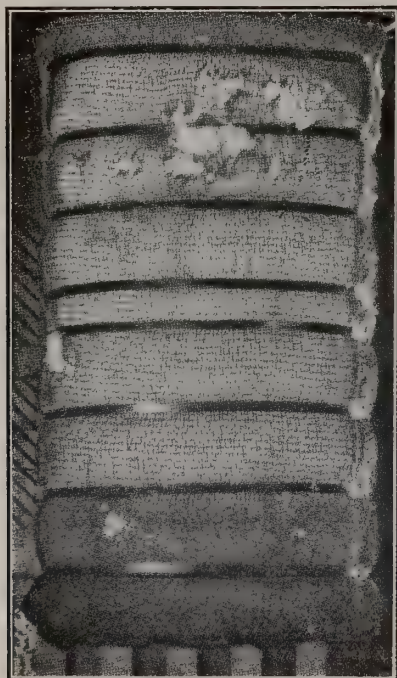
preparations of salts and gummy materials are sometimes added to increase the pliability and strength of the finished product.

Paper twisting may be divided into two operations. First, the preparation of the stock; second, the actual twisting. The first process consists in slitting the big paper rolls, which weigh from three to seven hundred pounds, into narrow strips of various width and re-

winding them into solid discs, ready for the paper twister. This process, while on the surface a simple one, corresponds with the carding preparation of other textile materials. It requires the utmost care and attention because the amount of waste made in the twisting and the quality of yarn depends upon how carefully this process has been performed. The discs must be wound tight and straight so as to separate from each other easily. There are a number of slitters made in the United States, one of them being especially suitable for this industry.

Types of Twisters.

Three types of twisters are used for the paper twisting industry. First, the disc system, which is the distinct feature of the Claviez process where the disc coming from the slitting machine is put into flat holders, and the paper twisted by two small rolls placed above the disc and delivered to the spools. Second, the flyer system, which is used in most of the American and English machines. In detail construction these machines may vary. In some makes the legs of the



Paper Bagging after a 3,000 mile trip.

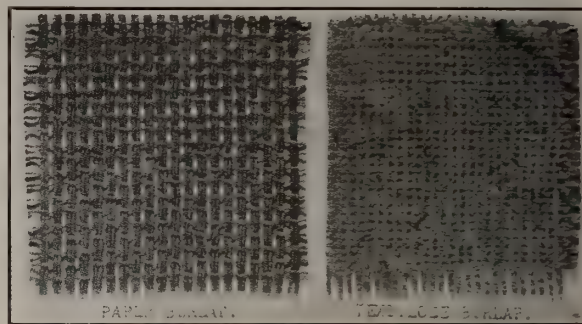
machine are turned upwards and the feeding takes place from the bottom; while in others the flyer is in the usual position and the feeding takes place from the top. The tension in most cases is obtained with a weight and band against the spindle or bobbin flange, and in some cases a spring is employed for this purpose. All heavy yarns must be twisted on the flyer system. For fine yarns the ring system has been perfected and gives very good results.

Compensation and Tension.

The greatest problem confronting the constructor of paper twisting machines is not in the twisting operation itself but in the delivery, condensation and tension. Paper in the dry state, especially when cut into narrow strips, is an unelastic, harsh material. Commercial yarn cannot be made without proper tension, and this must be adjusted in proportion to the weight of the bobbin which, of course, increases in the process of filling up the spools. The next problem is the delivery of the paper strips to the twister without imparting too much tension, or too little. Since the process of

drawing is eliminated, the paper strip goes direct to the delivery rolls, and to the guides of the twister, so there is still another factor of tension which requires consideration by the constructor.

If the tension on the spool is too great the yarn will break, and if not enough, the machine will produce an uneven, commercially valueless article. The tension must decrease in proportion to the size of the disc and the tension on the twister must increase in proportion to the diameter of the yarn thereon. As no machine has yet been built for such fine adjustment, a rigid overseeing is necessary. The paper strips are fed to most machines, flat, while on some they

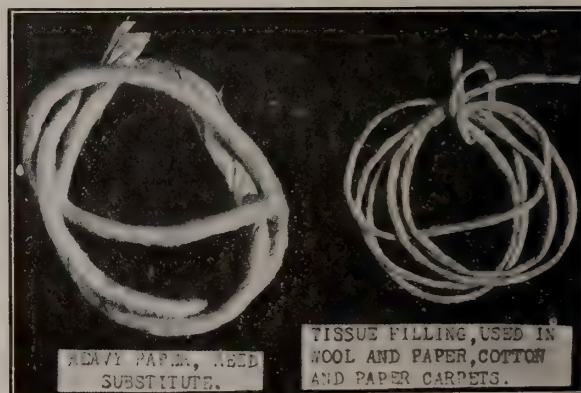


are condensed in a hollow tube turning the edges inward, thus reducing the possibilities of breakage.

Dry and Moist Twisting.

Yarns made of tissue and other thin paper are twisted either dry or moist, while heavy paper must be carried through a moistening device, softening the strip to make it more pliable for twisting. The Kron method differs from this procedure in that the cutting of the narrow strips is done right on the paper-making machine, thence carried into rubbing aprons similar to the ones used in wool carding, condensed into a round sliver, delivered in cans, kept in a moist condition, and then taken to the twister.

Universally moistening is done in a copper tank filled with water, behind the feed rolls, to which various



preparations of salts and gummy materials are sometimes added to increase the pliability and strength of the finished product.

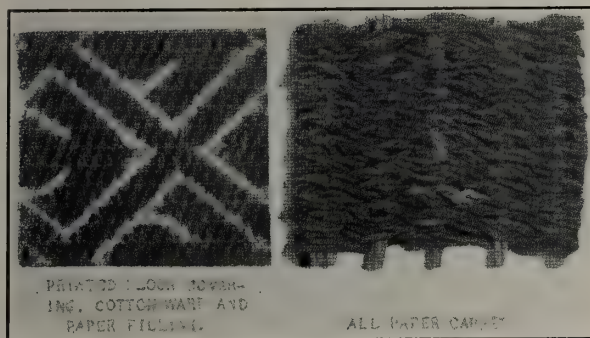
Comparison With Other Materials.

The greatest drawback in using paper yarn as a substitute for other materials is in its bulk, which often offsets the advantage of a lower price. The strength of paper yarn varies in proportion to the raw material and the twist imparted. The soft-twisted yarn made of tissue-paper cannot be compared in strength with

jute or cotton yarns of the same bulk or diameter, while the hard-twisted Kraft or sulphite paper can successfully compete in strength with jute, but it is about twice as heavy, thus offsetting the advantage. The success and market value of paper yarns and twines lies not as a substitute for jute, cotton or other textiles, but in their adaptability in fields where the other fibers have shown undesirable features.

Twines for Tying Wool.

Paper twines for tying wool, instead of sisal or hemp, is an instance where success depends upon special fitness. Many hundred thousand pounds of paper twines are sold in a year for this purpose, and it will not be many years before they are universally adopted. Woolen manufacturers know that when a piece of sisal or jute is mixed in with the wool it will



be carried through all operations with disastrous effect, while paper twine, if accidentally mixed in the wool, will dissolve during the scouring process and be thrown out during the carding.

There have been no serious attempts made to make wool bags of paper fiber which would have the same distinct advantage as the wool twine; but surely the future will bring a worth-while article for this purpose. Other fields where paper twines will be used successfully are the meat industry and tobacco packing. In spite of the fact that the industry is still in its infancy, quantities of paper yarn and rope are sold to the millinery and hat trade; for fuses in explosives, packing twines and reed substitutes. In the Middle West a large mill is making furniture, using paper fiber, with wire core, instead of reeds.

Future of American Yarns.

The future of paper twines in the United States is in the coarse and medium size numbers, since the manufacturing of fine sizes has proved prohibitively high with our labor cost. Japan produces a paper yarn to-day that can hardly be distinguished from combed Sea Island cotton in strength and uniformity, made of bamboo paper, but it is higher in price than Sea Island cotton. There is a greater future in the American market for paper fabrics than for paper twines, as in the latter the field is limited to a few specialties, while in fabrics there is absolutely no limit.

Floor Coverings.

Fiber floor coverings manufacture, a truly American industry, is still in its infancy. There are no means of telling how it may develop. In the majority of paper floor coverings paper yarn is used as a filling with cotton or jute warp, in a half double fabric where one filling is a cheap shoddy, while the other is of a soft twisted tissue paper. Wonderful designs

and effects can be obtained in these combinations, and a mill producing such articles was awarded a gold medal at the Panama Fair. Another method of using paper in floor coverings is with fine cotton warp, the filling is of soft tissue paper beaten closely together. Such fabric in finer construction is also used for suit cases instead of Chinese matting. The objection to this kind of floor covering is that the warp wears out, and the soft paper filling consequently goes to pieces.

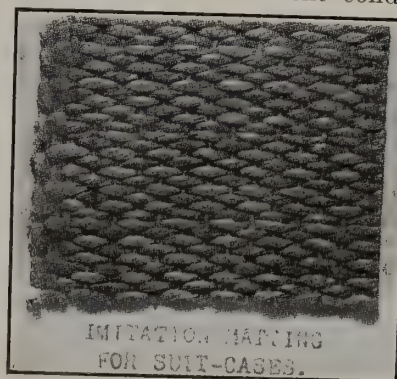
In the last few years an all-paper floor covering has been made by some mills where both warp and filling are paper and the designs are stenciled in oil colors similar to that of grass matting. Such all-paper floor coverings are usually made of kraft paper, are hard twisted, waterproof and very substantial, but yet have a certain matting appearance which makes them rather a substitute for matting, than an original article.

Recently a concern in the Middle West succeeded in producing a paper fiber carpet that has the softness and pliability of wool, elastic under foot, and a distinctly new departure from the usual article. The color effects are obtained by twisting the shades together on the four-ply basis, producing a soft mottled effect.

Bagging and Burlap.

While our paper fabric industry can count to-day a half-dozen mills producing floor covering exclusively, the bagging and burlap branch has fared with less success. It is very successful in Europe, but the high cost of manufacturing in the United States makes the competition difficult. This article was manufactured in New England, but discontinued on account of lack of profits. On the other hand, another mill established about two years ago, is fairly successful in producing specialties, notably bags for the shipment of vegetables, and there are indications that there will be a future development.

The possibilities of paper fabric for cotton bales were demonstrated last year by an actual test when cotton bales, covered with a heavy fabric, especially constructed for this purpose, were sent on a three thousand mile trip, unloaded six times and arrived at the point of destination in excellent condition. The



drawback in developing this field at present lies in the low price of gunny bagging. While all factors agree that the gunny sack is detrimental to the cotton, yet under present conditions the growers cannot be induced to adopt a superior wrapping at a higher price.

Less Inflammable Than Jute.

The tests conducted with cotton bales proved the surprising fact that the packing made of paper fiber is far less inflammable than jute, and being a smooth fiber, the cotton will not adhere to it, causing little waste at the opening of the bales. Paper fabric for

cotton baling is a feature that will sooner or later come to the front.

The articles that may be produced in woven paper fabrics are almost unlimited. While in the United States they are confined to floor coverings and a few specialties in baggings, Germany, England, Sweden and Japan have produced wall coverings, ribbons, quilting materials, towels with paper warp and linen or cotton filling, print cloth, especially for cretonne, upholstery goods with cotton warp and paper filling, horse hair cloth substitutes, carriage cloth, and many other articles, which have found their way to the market mostly in southern European countries.

Industry Has Come to Stay.

An analysis of this industry in the United States

proves that the paper textile industry has come to stay but its success will be entirely in different lines than that of the European mills. The American consumer can at any time afford a cotton towel or a silk and cotton ribbon, and under normal conditions it will not be necessary to turn to paper. The future of the American paper textile industry lies in the creation of new articles, and the development of paper floor covering indicates that the American branch of the industry will lead the world in new fields instead of substitutions.

The accompanying illustrations show a variety of paper textiles, all of which were made in the United States, excepting those where the place of manufacture is stated.—Textile World Journal.

Proper Reforestation

(By RALPH H. McKEE, Head of Pulp and Paper School, University of Maine, Orono, Maine.)

The planting and growing of trees deserves the same care and consideration as the planting and growing of other crops. The aborigines grew varieties of wild wheat and oats. The present day up-to-date farmer uses carefully chosen hybrids and as a consequence has varieties that will yield more than sixty bushels of oats and thirty of wheat per acre under conditions which, with the original wild varieties from which these crosses ("hybrids") were obtained, the yields would be but four bushels per acre for the oats and two or three for the wheat.

Almost all our crop plants cultivated to-day, whether grown for their roots, seed, fruit, stalk or flower, have, by similar crossings of the original wild varieties, been developed to give yields from five to thirty times that of which the original wild varieties were capable.

With trees, the present method of reforestation is to plant seedlings of the original wild varieties and the trees obtained are naturally no larger and no faster growing than the wild ones from which they sprung. I wish to plead to-day for the introduction of the modern scientific methods, that have been found valuable with other crop plants, to the growing of trees for wood for making paper pulp. In other words, I wish to plead for a careful study of the hybrids formed by crossing the varieties of trees that are related to the woods at present used for pulp wood, with the expectation that the hybrid varieties thus formed will be very much faster growers and make at least as good quality pulp wood as any we now know.

Enough has been done by Burbank, Henry, and others on the crossing of trees for other purposes to show that this expectation of increased size and speed of growing has a strong basis in its favor.

Henry has called attention to the fact, that first crosses of trees, as of other plants, are remarkable for their size, rapid growth, early and free flowering, longer period of life, the ease with which they can be multiplied, and in all probability, their comparative immunity from disease.

Burbank produced in 1897 a hybrid walnut as a cross between the European walnut and the California walnut. Three of these trees in fifteen years each measured eighty feet in height and six feet in girth. In these the timber when cut showed annular growth rings one inch in width.

Another cross between the California walnut and the Atlantic coast walnut was at sixteen years one

hundred feet in height and nine feet in girth. This, you will agree, is an astonishing size for such ordinarily slow growing trees as walnut.

These walnut crosses were not made for lumber, but only for their fruit and indeed so far have continued to be grown solely for their fruit.

Henry states that in England a certain hybrid willow "often attains, in fourteen or fifteen years from the planting of the sets, fifty to sixty feet in height and three and a half feet in girth." One at fifty-five years was a hundred and one feet in height and eighteen feet in girth.

To those interested in pulp wood, the natural thing to do is to think of spruce and poplar. Spruce is slow growing and slow to flower (30 to 40 years under forest conditions) and so far as I know, there have been no crossings of spruce attempted. With poplar, on the other hand, the trees grown from slips will flower when about four years old. This and the fact, that the flowers are easy to artificially fertilize as compared with spruce and similar trees, make poplar a much easier tree to handle experimentally.

There are a few cases of crosses which have been made between varieties of poplars and you will be interested to learn regarding them.

There is a wonderful hybrid poplar growing at Metz, Germany, which in 1913, when eighty-one years old from seed, measured a hundred and fifty feet in height and twenty-five feet in girth at five feet above ground and at last accounts seemed to be still growing steadily. A younger tree, a cutting from the tree just mentioned, was at forty-three years old, a hundred and forty feet high, and sixteen feet in girth, and would cut 7,000 board feet of lumber. In the case of another hybrid poplar, which was unrelated to those just mentioned, the cutting was forty-five feet in height and eight inches in diameter fifteen years after planting. This was on a poor shallow soil. These were accidental hybrids. There is no reason to think they are the most rapid growing that would be obtained if crosses were made systematically.

Henry by artificial fertilization obtained a hybrid poplar that in twenty-seven months was ten feet one inch in height. One appreciates what this means when one considers that many forest trees at twenty-seven years, instead of twenty-seven months, are scarcely more than a third this height.

Given a single satisfactory tree, there is no difficulty

in getting in a few years thousands, or even millions, of trees from it, each as good as the original hybrid.

The practical solution of the problem will be to get together specimens of the twenty-five or thirty varieties of poplar known in this country and abroad, cross them, grow the resulting hybrids, and test the woods obtained from these hybrids for pulp-making qualities. From the results obtained, choose the hybrid that in growth of wood, quality of wood considered, is the best and, using this tree as a source of stock, reforest the cut over pulp wood lands.

To carry out such a programme will take skilled scientific workers and some time. As I estimate it, it will require, to cover all expenses, about \$7,000 a year for six or seven years to get and test the possible hybrids and to get seedlings or cuttings to begin actual planting on forest lands.

In this connection it may be worth calling the attention of the younger generation of paper-makers to the fact, that twenty-five years ago, poplar was more used than spruce for making ground wood pulp for news paper. It is well known that to-day poplar is our most

used wood for soda pulp. Judging from an article of a month ago in the Pulp and Paper Magazine of Canada there is a possibility of poplar becoming in the near future an important wood for use in sulphite mills, if it can be had at a less price per cord than spruce. This sulphite pulp from poplar is obtained in good yield and meets the class of needs met in England by esparto pulp.

To make the same tests with spruce will not be as quick nor as easy as with poplar, for methods of technique will have to be developed, and the experiment itself will be slower to come to completion. Even if the cost and time were double that given in the case of poplar, it would still be very worth while. A forest with pulp wood of first quality, each tree of which increases two inches in diameter each year, is well worth working for. A single automobile company in this country expended last year \$500,000 in research. Should a company making pulp hesitate to invest \$7,000 a year for a few years when there is an even larger prize in sight?

Important Points in the Manufacture of Ground Wood

(By A. O. BOWNESS, Read Before the Annual Meeting of the Canadian Pulp and Paper Association.)

In the manufacture of Ground Wood Pulp, which is simply one of the mechanical operations, one of the important facts to consider is the method of handling the material. As all up to date mills have studied the question and arranged their plants accordingly, it might be of interest to you to describe the lay out of a recently erected pulp mill.

The mill I have in mind is the new pulp mill of the E. B. Eddy Co., Limited, Hull, and was designed with the idea of eliminating waste both in material and labor. The cost of material, being the greatest item in the finished product, it is very important that waste of material should be reduced to a minimum.

The mill is of structural steel and concrete approximately 180 ft. long by 130 ft. wide, and to give you some idea of its size I might mention that 400 tons of steel and 36,000 bags of cement were used during its erection.

The mill is practically divided into three long rooms, each 180 ft. long by 40 ft. wide, the barker room, screens, wet machines, slush vats, storage tanks, etc., being in one section, the grinder room in the centre section and the motor room being partitioned off from the mill proper in order to keep out the moisture, which is always present in a pulp mill.

The mill is designed for five main grinding units, four of them each consisting of one 1200 h.p. type, H.F. 2300 volt, 240 r.p.m. Induction motor and one 150 K.V.A. 2300 volt, 240 r.p.m. Synchronous motor, with shafts extended through the wall into the grinder room where they are directly connected to the grinders.

Each motor is controlled by a four panel black marine slate switchboard on which is mounted a main oilswitch, ammeter, two relays and six starting switches for cutting out the secondary resistance of the motors.

This switchboard is directly opposite the motor it controls which makes a very simple and compact lay-out. An ammeter is also placed in the grinder room on each unit so that the grinder men may see the load they are putting on the motors. One 200 h.p. type H.F. 2300 volt 290 r.p.m. induction motor with shaft extend-

ed through wall direct connected to refiners.

There are also 3-300 K.W. 2400-400 volt transformers, and switchboard to control same, for supplying the smaller motors around the mill.

In the grinder room, the centre section, there are five lines of grinders each line having 3-3 pocket New England Grinders with stones 26 inch. x 54 inch. diameter having a total capacity of about 100 tons per day together with one of refiners consisting of four stones.

The Barker room is on the second floor of the other section where are installed three Waterous Barkers: two 52 inch. and one 48 inch. diameter and one smaller Barker 21 inch. for very small sticks, so that all the wood is used. The wood is brought in by a conveyor and after barking dropped into a water tank below where it floats in concrete troughs to the grinders, one man only being required to distribute the wood to the different grinders.

In the same section as the Barker room there are 3 Rotary Screens, 6 Flat Screens, 14 Slush Vats and 8 Wet Machines, the large concrete storage tanks with a capacity of 75 tons dry weight being underneath with the three save alls through which all the white water has to pass before leaving the mill. Briefly, the pulp from the grinders is pumped to the Rotary Screens, run through the thickeners or Slush Vats, and by gravity to the Storage Tanks as No. 1 Grade. The Screenings from the Rotary Screens pass through the Flat Screens as No. 2 Grade. The Screenings from the Flat Screens run to the refiners afterwards being pumped back to the Screens, the white water passing through the save alls thus reducing the waste of material to a minimum.

In following the course of the wood through the mill it is interesting to note that after the wood is placed in the grinder it is not touched by hand until it is made into finished paper. I have two or three photographs of the interior and exterior of the mill which some of you might like to see.

Not knowing exactly what other papers have been

prepared for this meeting I have made a few notes with regard to the efficiency of the various operations.

BARKING: The question of barking wood is one on which opinions differ considerably. As so much depends on the state of the wood, its diameter, how clean it is barked, the kind of barkers used and conditions vary so much I think you will readily agree with me when I say that comparative figures as to the percentage of waste in barking, say, from two different mills have no special value. I have, however, results of three tests I made on:

- 1st. River wood, three to four years old.
- 2nd. Green wood brought in on cars.
- 3rd. Old wood originally brought in on cars and left in pile for twelve months.

Before giving the figures I might say that the results are the percentages of waste in barking to obtain extra clean wood.

Taking the river wood first with an average of 160 pieces 2 ft. to the cord the loss in barking was 25.2 per cent.

Green wood with an average of 181 pieces (2 ft.) to the cord the loss in barking was 27.16 per cent.

Old wood with an average of 240 pieces 2 ft. to the cord the loss in barking was 29.43 per cent.

I have also made tests on River wood 176 pieces to the cord 2 ft., showing only 1.25 per cent waste in barking, but the resultant pulp cannot for one moment be compared with a pulp having a waste in barking of say 20 to 25 per cent as far as cleanness is concerned. Again the diameter of the wood largely affects the waste, the smaller the wood the greater the loss in barking comparative figures while interesting, have no real value.

I think what is of more interest to us, is: Which is the most efficient barker. Not having had any experience with the Drum Barker I am not in a position to say anything as to its merits. With reference to the barker with steam attachment and hand barker I am certainly of the opinion that the latter is the most economical and does better work where good, clean wood is required.

The tests I have just mentioned were all done by barkers with the Witham Steam attachment and I venture to say that if, in these same tests the hand barkers had been used there would have been at least 10 per cent less waste. The test I made last week shows 14.6 per cent waste, 154 pieces to the cord all done by Hand Barkers.

GRINDING: A very important operation is the grinding of the wood. There are, I think, four points to consider, viz.:

- (1)—The most efficient stones.
- (2)—Burrs for jiggling the stones.
- (3)—Temperature.
- (4)—The pressure.

The question of the best stones I leave to a more competent man in our friend, Mr. Dickson, of the Lauretide Paper Co. who has, I understand, made a special study of the efficiency of different stones:

BURRS: The diamond Burr is a very satisfactory one to use, and with a burr 8 threads to the inch I feel confident in saying that with this style of Burr the best pulp can be made. It is also absolutely essential that a systematic jiggling of the stones be made to obtain a uniform pulp and too much time cannot be spent in studying the question of jiggling. Allowing that each pulp mill superintendent "Jigs" according to his requirements as to quality and output, I think generally speaking, a medium sharp stone is one which has proved the most satisfactory when taking into consideration the

quality of the pulp together with the output.

TEMPERATURE: What is the best temperature to grind pulp at is often asked and as far as I know it has not yet been answered satisfactorily. The pulp of most value to the paper-maker is one which has the best felting or inter-weaving properties. To obtain a pulp of this kind the fibres should be soft and long and in making ground wood this point should always be kept in mind.

Temperature plays an important part in obtaining a Fibre of this kind, the heat being produced by the friction caused by the pressure of the wood against the revolving stone. If a Pulp is cold ground what sort of a Fibre is obtained? As much more water is necessary the stones are kept clear of pulp and having a much greater cutting action and very little rubbing or no felting properties. The pulp made consists of small bundles of fibres instead of ultimate or single fibres which causes it to have little or no felting properties—so essential in all good pulps for paper-making.

Take the other extreme temperature, grinding too hot, what is the result? A fibre ground far too fine having no value to the paper-makers as a fibre, being practically dead or inert, and in many cases causes more trouble than it is worth—besides increasing the wear on the stones. Now, as to the right temperature, taking everything into consideration, I think a temperature of about 130 F. to 140 F. is a good average temperature in the production of the best qualities of ground wood.

PRESSURE: This factor plays an important part in the grinding, it is a well known fact that one cannot get quantity as well as quality in making good ground wood, and as different pressures used produce different qualities of pulp I will endeavor to point out the effects of different pressure in the grinding, with a medium sharp stone.

(1)—Take grinding at a low pressure, say 40 lbs. having a 12 inch cylinder, a fine fibre is obtained suitable for tissues and book papers, but the out turn will be small.

(2)—Grinding at about 60 lbs. the resultant fibre will be long and very suitable for news and printings the output being very satisfactory too.

(3)—Grinding at a high pressure, say 90 lbs., the out turn would be very large in comparison to the previous examples quoted, but the quality would be very much inferior and am at a loss to say what this quality would really be suitable for. Knowing the effect of the different pressures on the wood I think you will agree with me when I say that an average working pressure of about 60 lbs. is one which is most satisfactory in producing a good ground wood suitable for most papers.

SCREENS: In discussing the efficiency of the Rotary and Flat Screens, I think the Rotary Screen is the more efficient one for ground wood. A Barker and Shevlin Screen with a No. 65 Plate will make cleaner pulp and screen more stock than 6 Flat Screens. It requires very little attention thus saving the wages of a man, occupies much less floor space and requires less power per ton of pulp than the flat screens. One of these Rotaries will screen from 25 to 30 tons per day.

In a mill where both ground wood and paper are manufactured, the ground wood after screening, is run through thickeners or vats for the purpose of thickening up the stock by removing some of the water. From the vats the thickened pulp passes to large storage tanks and is pumped as required into the beaters.

WET MACHINES: As some manufacturers make all their product into laps on the Wet Machine the main point to consider is the cost of operating these

machines. The largest out-turn, one might think, would be the cheapest as far as cost is concerned, but I venture to say this is not so. An average output of say from five to six tons dry weight testing from 35 to 40 per cent dry is a fair quantity which in 24 hours can be made most economically on the ordinary 72 inch Wet Machine.

A few remarks here anent "Save Alls" would not I think, be out of place. There is always a large amount of fine fibres carried away in the backwater from the Wet Machines and Slush Vats. Different ideas have been tried out with varying success to retain this fine stock. The Fullner Patent Save All, made by the Moore and White Co., Philadelphia, Pa., is a very efficient one, showing a saving of at least 5 per cent, and is one well worth the consideration of all ground wood manufacturers, the cost of operation being low.

POWER: Power in any manufacture usually being a big factor in the cost of production it might prove interesting to state the approximate power required for the different operations in ground wood making.

It is easily understood that the power required varies considerably according to the quality of the pulp made and would say each figure I mention is the approximate power per ton of pulp required for an average good quality, viz:

	H.P. per ton Pulp.
Barkers	1½
Grinders	55-60
Rotary Screens	1
Wet Machines and Slush Vats . .	1½
Flat Screens	1½
Save Alls	1⅛
Pumps	3

Through the kindness of Mr. G. H. Millen, President of The E. B. Eddy Company, Limited, I have with me samples of Ground Wood made under conditions I have briefly touched on together with samples of Paper containing Ground Wood in vary proportions, which you may wish to examine.

RESULTS OF SAFETY WORK.

A large United States industry gives the following analysis of accidents in its plant for the first half of 1915. Safety work has been systematically carried out since January, 1915, only, and excellent results have been secured.

	P.C.
Carelessness of injured	71
Miscellaneous	24
Carelessness of others	3
Lack of mechanical guards	2

In the same period there were 1,168 day's time lost, as a result of accidents, compared with 3,164 days lost in the corresponding six months of 1914.

HEADS OF FIRM GET LOVING CUPS.

Messrs. C. H. McFarlane and A. A. Hodgson, President and Vice-President of McFarlane Son and Hodgson, of Montreal, were honored by their employes a few days ago. On the occasion of the 35th anniversary of the formation of the company the employes presented the two heads of the firm with loving cups. Mr. McLeod made the presentations on behalf of the staff. The whole proceeding was a surprise to the partners, but they rallied and made suitable replies.

Textiles from Wood Pulp

London has, no doubt, added many new industrials to its list since the war began, but few, perhaps, of greater importance and fascinating interest than that of paper spinning and weaving.

A writer in an English journal thus describes the visit made to a plant engaged in the processes mentioned above.

"I have the opportunity of seeing some wonderful things in the way of yarns and textiles manufactured from paper pulp, and also of seeing a demonstration plant at work spinning threads of paper into twine fine enough for gas mantles and strong enough to hold a ship, writes a correspondent.

"This wonderland is to be found in Southwark and at the works of the Textile Engineering Company, which is now supplying British made machinery, made according to its patents, for the manufacture of every kind of thing imaginable which formerly was made of hemp and jute and flax.

"The things you see around you," said Mr. George Seaton Mills, the managing director of the company, "are new, and yet they are not new. What I mean is that the people of China, in the days of Confucius, probably twisted a strip of paper in the fingers absent mindedly and found it had remarkable strength, but what we have done is to make that idea into a practical proposition.

"The Germans with their facility for imitation, have spun paper for years, but they never could spin it fast enough to make it pay. We now have found means of spinning the paper four or five times faster than the Germans and of producing the goods 4 per cent cheaper."

Mr. Mills then showed me around the works and demonstrated all the processes, from the raw material, which in this case is a reel of fine Canadian wood pulp, to the highly finished fancy wall coverings in pattern and color.

The paper is first cut into strips according to the width of yarn or rope strand required, then twisted on frames very similar to those used in cotton or woolen manufacture, and afterward, by means of spools of weft and warp, the material is transferred to looms which will leave anything, plain or fancy, ribbed or patterned.

Incidentally, the invention will solve the great problem of how to make up the supply of packing string, for paper is now proved to be capable of carrying any reasonable weight.

TO HOLD CONVENTION.

The Third Annual National Printing, Lithographing, Paper, Stationery and Allied Trades Exposition will be held in Madison Square Garden, New York, September 30 to October 7, under the management of Harry A. Cochrane, founder of this exhibition, and its manager since its inception.

SECURES CONTRACT.

The Raymond Concrete Pile Co. has been awarded the contract for the foundations and new additions to the Belgo-Canadian Pulp & Paper Co., Limited, plant at Shawinigan Falls, P.Q.

Review of Canadian Paper Trade

(Continued from last issue)

Trent River Paper Co.

We have perhaps increased the possible output of our plant by 15 to 20 per cent.

We do not think there is anything that we have done during the past year that would cause any special comment.

We consider the prospects for the board market for the coming year to be very excellent, whereas our output was necessarily restricted during the latter part of 1914, and the greater part of 1915, on account of the demand dropping off. Conditions are now, we find, much better.

We hope to operate to full capacity during this year, and the orders on hand at the present time make us feel that we are quite secure in this contention for at least six months.

The export demand for pulp is so brisk that we feel that there will be a scarcity for domestic trade in these lines.

However, we do not think that the paper mills will operate as profitably this year as in the past, on account of unsatisfactory labor conditions, and of the very extensive increase in cost of many of the manufacturing adjuncts such as felts, brass wire cloth, acids, color, sulphite, etc., etc., etc., and we also already feel the increase in cost of the raw material.

W. J. Gage & Co., Ltd.

Re Kinleith Paper Co., Ltd., St. Catharines.

During 1915 we erected a new building, in which we have installed two new washing engines of large capacity. We have also doubled the capacity of our filtering plants.

Business throughout the year has been very quiet, though we have been able to keep running, and we believe the prospects for 1916 are for a good business. Whether this will be a profitable business remains to be seen, as all raw materials have advanced very much in price, and there is still evidently a rising market. Unfortunately there has been no advance in Canada on the selling prices. Such conditions cannot be regarded as satisfactory by the book and writing mills.

Re W. J. Gage & Co., Limited.

We have made no special changes in our plant here. Business has been good in some departments—quiet in others, throughout 1915. We look forward to better things in 1916. Stocks are low all over the country, and there is a good feeling abroad. We have had reports within the last few days from a large number of our customers; these reports come from every province of the Dominion, and almost without exception they speak of an excellent Christmas trade—in many cases the best for some years—with an excellent prospect for 1916.

In order to better care for our Western business we opened on January 1st of this year a Winnipeg branch.

Belgo-Canadian Pulp & Paper Co.

We would say that our output last year, in all de-

partments, ground wood, sulphite, and paper, exceeded any previous years figures since the mill started. Our new machine 202 in. is now being installed. We figure it will be in operation by the end of next month, or earlier. Our output of newsprint will then reach 180 to 185 tons daily. In all probability we shall, during the coming summer, extend our sulphite plant, thereby increasing our capacity 30 tons daily, which will then reach a daily output of 90 to 100 tons.

Our ground wood product averages 150 to 160 tons a day. All our product has found a ready market, and the demands upon us at the present time are taxing our capacity severely. My forecast is that this will be a very busy year for the industry generally.

Rolland Paper Co.

We have placed a new line of paper on the market called Canadian Linen Bond, which is meeting with a good demand.

The last three months of 1915 were very good. We consider that there will be a great demand for paper in 1916, but the great trouble will be the scarcity of raw materials necessary to meet the above demand.

Toronto Paper Manufacturing Co.

This company has not put on the market any new lines in the past year, but we have brought our plant to a high degree of efficiency, and are looking forward to a more prosperous year. Of course, conditions are somewhat unsettled; for instance, the color market is something never before experienced. The prices of all colored papers are advancing, and will continue to advance until some substitutes are made outside of Germany. Also the European market is cut off from supplying us with our rags, and this will lead, presumably, to higher prices in the better grades of paper, and the lower grades will also probably be increased in prices owing to the advance in the cost of sulphite, which now is marked up about \$10.00 per ton.

Edward Partington Pulp & Paper Co.

We have not made any extensions, nor have we done much in the way of repairs to our plant during the past year. We do not anticipate doing very much during the coming year, outside of installing the well-known "Barker System" of acid making.

In the way of general business, we have practically all the business we can handle throughout the coming year in bleached pulp, and at much higher prices than in the past.

Edwin Crabtree & Sons.

We beg to say we have made no improvements or additions whatever to our plant for some time, nor have we put any new grades of paper on the market.

As regards the business outlook for this year, we cannot say very much about it as yet, but from present indications there will be a much better demand throughout the year than during the past year. Prices have gone up on all grades, but not so much from the increased demand, as owing to the advanced cost of practically all raw materials.

Don Valley Paper Co.

Under the able direction of C. Nelson Gain, superintendent of the Don Valley Paper Co., Limited, Toronto, many improvements have been made to the plant during the past year, and a number of new and exclusive lines places on the market. A filtering system, with a capacity of one million gallons in 24 hours, has been installed, as well as a plater, motor driven, for the turning out of crash and linen finish cover papers, an elevator and other improvements. Among the new lines are higher grades in covers and bristols, linen finish and special designs. Patriotic names have been given to the Made-in-Canada Bristol lines, these being the Empire Rope, in eight shades, Maple Leaf Bristol in eleven colors, and Beaver Bristols in fifteen colors. All these have a very smooth and artistic finish, and the company report that the business outlook for 1916 is good, with orders booked for some months ahead. In cover papers the crash and linen finish, which are the only goods of the kind turned out in the Dominion, have also taken exceptionally well with the trade.

Speaking of the color situation, Mr. Gain, who entered upon his present position just a year ago, and brought the plant and output up to a high state of efficiency, having increased the daily output by 1½ tons, said that the outlook was very serious. Aniline dyes were almost exhausted, and substitutes gave very unsatisfactory results. The company were able to take care of most of their customers in the majority of colors, but dare not guarantee an exact match in any line. Several employes have enlisted during the past year, and of those on the honor roll, Harry Hyde and Joseph Raynor had been killed in action.

Beaver Board Fibre Co.

The Beaver Wood Fibre Company, Ltd., Thorold, Ont., engaged exclusively in the manufacture of Beaver Board, Beaver Tile and Beaver Blackboard has been running to capacity ever since its wheels were first set in motion in October, 1914, and this, despite the general business depression of 1915, with marked inactivity in the building materials line. Furthermore, the mill has exceeded in output the fondest expectations of the officials and superintendent, Edward Wright.

With the return of more nearly normal business conditions in the United States, which are reflected to some extent in Canada, and in view of the bright outlook for 1916, it is likely that the Thorold output, in addition to the companies' large output from associate mills, will fall so far short of the Beaver Board Companies' requirements this year, that the other unit of operation, which the Thorold mill was built and designed to accommodate, will have to be installed.

Thirty-six hundred electric horse-power from Niagara Falls is now consumed at the Thorold plant. When the second manufacturing unit is installed the consumption will be 6,500 horse-power.

During the past year additional save-alls, centrifugal screens and two refiners have been added to the equipment of the mill.

Paper Mill Will Be Rebuilt.

The paper mill of the Northumberland Paper and Electric Co., which is located at Campbellford, Ont., was destroyed by fire on Sunday, February 13. The blaze broke out in the roof of the machine room, and just how it originated is a mystery. The flames spread with amazing rapidity, and the building was totally wiped out. The blacksmith shop and the sub-station were the only structures to escape. About 15 years ago there was a fire at the mill, but the damage then done was slight as compared with the recent disaster. The stock room contained several thousand dollars' worth of raw material and finished product, which was consumed, as well as a car standing on the siding, which held stock valued at several hundred dollars. The mill was equipped with seven beating and three Jordan engines, one 48-inch binders' board machine, and one 70-inch five cylinder.

The company, of which J. G. G. Kerry of Toronto, is President, and David F. Robertson, is General Manager, made straw board, filled board and pulp board, as well as binders' board and tarred and plain sheathing papers. The output was 20 tons a day, and the plant has been exceptionally busy. The loss was \$125,000, which is fairly well covered by insurance.

The company has decided to rebuild at once on a large and more up-to-date scale, on practically the same site, which is on the west side of Ranney Falls, just south of the town. Some fifty hands were employed in the mill, but arrangements have been made so that none will be out of work. The company also operates a ground wood pulp mill, which has a capacity of 25 tons per day. This industry was not touched by the flames.

(Continued in our next issue)



A. G. McINTYRE,
General Manager Mattagami Pulp & Paper Co. Ltd.

BRITISH NEWSPAPERS AND THE PAPER SHORTAGE.

(Special to the Pulp and Paper Magazine).

London, Eng., Feb. 15th.

The excited condition of the pulp trade opens the way for a cursory review of events that have taken place amongst the big users of pulp since the war began. The printing industry as a whole has declined, for although military and voluntary organization has led to a considerable transfer of orders, there has been a falling-off in general industry in advertising and in political and social work, and the increase in prices which printers have been obliged to charge to cover the higher cost of production has prevented a good many people from placing orders.

The remarkable feature among big users of paper, however, is the general stability of the newspaper trade. For a few days after the outbreak of the war in 1914, the newspaper world was in panic. London journals were seriously contemplating cutting down to four pages. But as time went on, and supplies were maintained, these fears subsided, and we still have a journal like the "Times" occasionally giving its readers forty pages for a penny, even eighteen months after the beginning of the hostilities.

It is not the supply of raw material that has prejudiced newspapers; it is the vast change in the commercial conditions. In normal times very nearly half of the journals published in the United Kingdom depend upon subsidies, or upon some subsidiary industry, such as a general printing, or upon the prosperity of a sister journal, as in those cases where a morning and an evening paper are issued from the same office, one at a profit and one at a loss. The number of journals that actually stand firmly upon their own feet is surprisingly small. From among the others some have disappeared during the war. There was the "Daily Citizen", the new Labor organ, that had not had time to become established; and only a few days ago, there was the "Manchester Courier", a journal that has had a chequered history and fought against heavy odds, and has now ceased publications as a daily paper. It is calculated that altogether between four and five hundred journals have dropped out of existence during the war. Most of these were obscure weekly papers. Altogether they do not count for a very great deal in the pulp market, for their circulations were small.

Strange as it may seem, the war has not added much to the aggregate circulation of British newspapers. In the second half of 1914 there was an increase probably of twenty to thirty per cent on the normal figure. Some journals increased much more than that, but I am now speaking of the aggregate. Gradually there has been a decline, and again, although some journals have maintained a high rate of increase, I should say that on the whole fewer newspapers are bought in these islands before the war.

Newspaper Revenue.

Another curious thing to be quoted is that on the advertisement side, which is the principal source of revenue for all except a few largely-circulated four-page evening journals, the war reveals both credit and debit entries. For the first twelve months a great deal of money was spent by Government departments on advertising, first for recruits, then for the war loan.

There has been a fair amount of advertising by the voluntary war organizations, although, in this direction, the press has been marvellously generous, and has given vast publicity without payment. I know of one or two cases where the total advertisement revenue of a newspaper has actually increased during the war; but here again we are falling upon bad times, and there is no prospect of anything like a rise until the war is over. And, of course, it is only too evident that the aggregate expenditure on advertising has seriously declined. A reduction in revenue, coupled with even a slight rise in the cost of production, would account for the disappearance of many journals that were subsisting on a slender margin, or were supported by subsidies which the conditions of war made impossible.

At present an attempt is being made to persuade newspaper proprietors to increase their charges for copies. It is suggested that a penny should be charged for halfpenny papers, and three-halfpence for penny papers, and it is even proposed that a new coin representing three-halfpence shall be minted. If this scheme is carried out, while it will undoubtedly benefit newspaper proprietors, it will lead to a large reduction in the consumption of paper. It is not suggested that the sizes of papers should be increased with the price; the extra charge is to meet existing and expected deficits. But it is quite certain that fewer people will buy newspapers if the price is increased. A large proportion of purchasers buy two or more papers a day, and even in the case of country weeklies many people buy both rival journals. They will not do so if prices go up. I do not think however that the movement for higher prices will be very widely successful. Newspaper conditions in a small country like England, where the distances between centres of population are so short, are very different from conditions almost anywhere else. London morning papers actually compete at breakfast tables in the north of England with papers printed locally. Manchester and Liverpool could supply each other with newspapers; the Nottingham printing presses could over-run Derby; Sheffield newspapers could invade Nottingham or Leeds; and so on. It would be a matter of extreme difficulty to arrange a working plan that would be fair to all. It may be tried with success in districts, but it is hardly likely to be tried at all throughout the country.

So long as the war is continued the present deadlock way the tendency will be for newspaper sales to decline. This conclusion, coupled with continued stagnation in the general printing industry, indicates the course which the pulp trade will now be facing.

CREOSOTED BLOCK PAVEMENTS.

Statistics show that since 1908 the increase in the use of creosoted wood block in the United States has been very rapid. For example, in 1908, 1,260,000 cubic feet are reported to have been laid, which amount was increased to a total of 10,000,000 cubic feet in 1911. Recent years have shown even greater increases, 1914 alone approximating 4,800,000 cubic feet of wood pavement.

DYE STUFFS PROBLEM.

Thirty-four concerns in the United States are now manufacturing dye stuffs and production is at the rate of 15,000 tons a year compared with 3,000 tons before the war.

PULP AND PAPER NEWS

Joseph Kilgour, of Toronto, President of the Canada Paper Co., is spending the remainder of the winter in Florida, and other points in the sunny south.

The annual meeting of the Interlake Tissue Mills, Limited, whose plant is located in Merriton, was held in Toronto recently, at which satisfactory reports were presented for the past year. The number of orders on hand is the largest that the company have experienced in their three years' successful operation. The contract has been let for a large extension to the buildings. The company manufacture tissues of all kinds, plain and crepe toilet papers, light wrappings, bread wrapping paper and many specialties. George Carruthers was re-elected President; I. H. Weldon, Vice-President and Treasurer, and S. F. Duncan, Secretary.

A. F. Winn, who has been on the city sales staff of the Canada Paper Co., Montreal, for many years, recently received a large silver salver, which bore the following inscription: "A. F. Winn, from Lord Rothschild, in recognition of his research work in the science of entomology, February, 1916." Mr. Winn has long made a hobby of the study of the habits, structure and distribution of insects and is recognized as a leading authority on the subject. He has addressed important gatherings at the Ontario Agricultural College, Guelph, the Dominion Experimental Farm, Ottawa, and other bodies.

The Citizen Publishing Co., Limited, of Ottawa, with a capital stock of \$400,000, has been granted a provincial charter. The new company is empowered to acquire and take over as a going concern the business carried on under the name of the Ottawa Citizen Company, Limited. The incorporators are Wilson M. Southam and Harry S. Southam, of Ottawa; Wm. Southam, Wm. J. Southam and Gordon H. Southam, of Hamilton.

The capital stock of the Continental Publishing Co., Limited, of Toronto, has been increased from \$40,000 to \$100,000 by the creation of six hundred shares of new stock of the value of one hundred dollars each.

The Garden City Paper Mills Co., St. Catharines, Ont., have sent out notices to the trade that, in the interest of those whose business they have on hand unfurther orders from now until April 1st next.

The annual meeting of the St. Maurice Forest Protective Association was held in Montreal recently, at which Ellwood Wilson, of the Laurentide Co., was elected president, Robert B. Grant, of the St. Maurice Lumber Co., vice-president, and Henry Sorgius, manager and secretary-treasurer. Among the speakers was Hon. Jules Allard, Minister of Lands and Forests

for Quebec, who referred appreciatively to the work done. President Wilson, in his report, told how the introduction of new methods and ideas has raised the standard of efficiency and most satisfactory advances had been made in eliminating indiscriminate slash burning on farmers' lots in clearing land. The Association desired that the law be altered so that there should be no setting of fires to clear land between April 1st and Nov. 15th without written permits. The total number of fires was 27 per cent less in 1915 than in 1914, and the number of fires requiring extra labor had been reduced by twenty per cent. Nine look-outs had been constructed, making twenty-three in all. The area patrolled by the Association was 7,892,776 acres. President Wilson remarked that the Dominion Government railway, which traversed the province, was not doing anything to protect the right of way, and was responsible for the largest number of fires set by any railway. It cost the Association nearly \$4,000 to patrol the railway last year, a charge which the Federal Government should meet.

There has been an amalgamation of papers in Port Arthur. The Evening Chronicle (Liberal), and the Daily News (Conservative), have united and now appear as one paper, under the name of the Daily News Chronicle, which will be independent in politics.

George Steacy, representing the paper firm of John Walker & Sons, London, Eng., was in Montreal and Toronto recently, on his way west, and booking orders for his house.

A Federal charter has been granted to the Advance Engineering Co., Limited, of Toronto, with a capital of \$20,000. The company, at the head of which is A. G. McIntyre, have opened up offices in the Traders Bank Building, Toronto. The company control several patents in acid systems, bleaching systems, electrolytic plants, sulphur burners and digester linings, and in the matter of complete sulphite mill equipment, plans and reports, mill management and process development, are experts.

The timber statement for December for British Columbia shows that the total scale of saw logs for the province amounted to 52,500,857 feet, board measure, in addition to 367,698 lineal feet of piles and logs, and 19,854 cords of railway ties, shingle bolts, etc.

Work will start early next month on the erection of the new sulphite mill of the Ontario Paper Co., at Thorold, Ont., which will have fifty tons capacity and two digesters, 49 feet high and 15 feet in diameter. The building will be of steel, concrete and brick. The digesters are now being built at Bridgebury, Ont., by the Canadian plant of the Chicago Bridge and Iron Works.

The annual meeting of the Provincial Paper Mills Co., Limited, was held in Toronto on February 17, at which reports were presented on the operations of the various plants of the company during the past twelve months. While the volume of business was not equal to that of the previous year, still, in view of the curtailment of operations in all lines of manufacturing, the showing was regarded as highly satisfactory, and the outlook for the coming twelve months is much more promising than a year ago. During 1915, some improvements were made to the plant at Mille Roches, where a new truss roof was put on the machine room. All the mills of the company are now running to capacity, and the coating plant at Georgetown has not been as active as it is at the present time in many months. The following officers were re-elected: Pres., I. H. Weldon, Toronto; Vice-pres., T. A. Weldon, Thorold; Sec.-Treas., S. F. Duncan, Toronto; directors: C. B. Gordon, Montreal; Alex. Fasken, Toronto; S. B. Monroe, A. B. Connable, W. M. Loveland and Ralph Emery, Kalamazoo, Mich. After the business proceedings, the directors were entertained to luncheon at the National Club, Toronto, by President Weldon.

Edward Stedman, of the firm of Stedman, Bros., stationers, Brantford, Ont., fell while running an elevator at the wholesale house of the firm on Feb. 21. He was overcome by a fainting spell, and his head was caught between the elevator and the floor above. His skull was fractured, death being instantaneous.

W. P. Ryrie, of Toronto, Managing Director of Becker and Co., of America, who some time ago underwent an operation for an internal affection, is spending a few weeks at Atlantic City recuperating.

The Mattagami Pulp and Paper Co., Limited, with headquarters in Toronto, have been granted a Provincial charter. The capital stock of the new company is four million dollars, with two million dollars seven per cent, cumulative preference stock, and two millions common stock. It is understood there is ample capital behind the new enterprise, and that there will be no public offering of the securities. The financial arrangements are in the hands of Duncan Chisholm, of Chisholm's Corporation, Limited, Toronto, and a number of leading Canadian capitalists are interested. A new 75-ton bleached sulphite mill will be erected at Smooth Rock Falls, on the Mattagami River, thirty miles east of Cochrane, and on the line of the Canadian Transcontinental Railway. Preliminary drawings are under way, and will be completed in the course of a few weeks. The equipment for the new plant has already been ordered. There will be two Manitowac steel digesters, each 19 feet diameter and 65 feet in height, and a Black and Clawson drying machine, 152 inches wide, will also be installed. The Mitscherlich process will be the one adopted, and the product will be bleached electro-chemically. It is expected that the mill will be completed and in operation by June 1st, 1917. Work will soon start on the new concrete dam of the company at Smooth Rock Falls. It will have 45 feet head and 10,000 horse power will be developed. The company have three water falls in all and control about one thousand acres of splendidly wooded spruce limits. A. G. McIntyre will be general manager, and have charge of the building of the mill. Associated with him will be a thoroughly competent and experi-

enced staff. The names have already appeared in the Pulp and Paper Magazine.

A New Barking Drum

The American Barking Drum Company of Chicago has placed upon the market a continuous process barking drum which bids fair to make a notable advance in the science of cleaning wood for use in pulp and paper mills.

The drum makes use of the water immersion principle, the drum revolving in a concrete vat of water almost half the depth of the drum.

The dimensions of the barking apparatus are 22ft. long by 12ft. wide by 15ft. high, the drum being 20 by about 8ft.

The Company claims that only one man is required to handle the work as it leaves the drum and that therefore the saving on labor is considerable. The Company also claims that the drum will bark any kind of wood under any circumstances and that the wood is not brushed on the end during the process; further that the wood comes out of the drum perfectly clean with all the skin removed and all the valuable wood remaining with the stick. The bark is dropped into the vat containing the drum and is automatically carried from it by means of fork attachments and discharged into a trough at the side of the drum.

Owing to the fact that the water in the vat carries much of the weight of the wood in its revolution, repairs on the drum are very light as the bearings are not called upon to bear much of the load. Further, as the drum is suspended on chains the weight falling upon the bearing is not very heavy, and neither of the bearings is submerged in water.

The Company claims that the 20 foot drum consuming approximately 25 h.p. will bark in ten hours 25 to 35 cords of car wood and from 60 to 80 cords of river wood. This drum requires the labor of three men.

In the installations which the Company has made in various mills throughout the country they report entire satisfaction with the operation of the drum.

HOW BIRDS PLANT TREES.

Dr. M. W. Blackman, Professor of Forest Entomology, Dr. L. H. Pennington, Professor of Forest Botany and Dr. C. C. Adams, Professor of Forest Zoology in the New York State College of Forestry at Syracuse University attended the meetings of the American Association for the Advancement of Science held at Columbus, Ohio. Dr. Adams, while there, read a paper before the Wilson Ornithological Club on the relation of birds to Adirondack forest vegetation. He spoke of the damage done by sap suckers to aspen, yellow birch, beech, hemlock, etc. He brought out the fact that much burned over land is planted through the action of birds in carrying certain seeds; especially is this true of bird cherry. This bird forms a temporary cover on otherwise barren soil, preventing erosion and acting as a nurse crop for future forest trees. The Ecological Society of America was organized, Dr. Adams acting on the organization committee. One hundred botanists and zoologists are charter members of the society.

the Board of Directors issued the following statement: "The great depression in the business of manufacturing writing paper continued during the first nine months of 1915. We are, however, pleased to report a marked change since October 1 in the demand for our goods, and a general strengthening of prices, stimulated by the advance in raw materials and supplies.

"In our report for the year 1914 you will note that there was a credit item of \$148,848 for refund to us of excess duties on imported wood pulp, while in 1915 this item amounts to only \$8,072.

"The plants of the company are in a higher state of efficiency than ever before. Notwithstanding a decrease in gross sales, the result of the operations of the mills shows a marked improvement in profits on production as compared with 1914.

"Our total expenditure for the year 1915 for extraordinary repairs was \$294,886.38; all of which has been charged to operating expenses. Included in the 1915 expenditures are permanent improvements amounting roughly to \$75,000, which have already paid for themselves in increased production and decreased cost."

* * *

The American Writing Paper Company has a new general master mechanic. He is Horace U. Daub, whose promotion to this position was announced from the officers of the company last week, and who has served as master mechanic at the Windsor Paper Company, division of the American Writing Paper Company, at Windsor Locks, Conn., for more than fifteen years. Mr. Daub will assume his new duties the latter part of the month, and will have his offices in Hol-yoke.

TO REDUCE FOREST FIRES.

The Quebec Government is determined to reduce the number of forest fires in this Province, and legislation with this end in view has been introduced by Honorable Jules Allard, Minister of Lands and Forests. The changes about to be made, briefly summarized, follow:

First, that all persons between the ages of 19 and 50 may be called on to aid Government officials in fighting fires, and must respond to the call of the Government in such cases, unless they can submit valid reasons for refusing to serve as fire fighters. For each day they work for the Government in fire fighting they will be paid \$1.50 to \$2.00.

Another amendment aims to reduce the danger of fires from railway trains. It will be required that timber limit holders shall clear the trees from each side of railway tracks for at least a distance of 100 feet.

The third change provides that settlers will be prohibited from clearing timber in summer months without a permit from the Government forest ranger.

CAPITAL INCREASED.

The capital stock of the W. C. Edwards Lumber Company has been increased from \$400,000 to \$4,400,000.

A CORRECTION.

In the last issue of the Pulp and Paper Magazine an article by Mr. G. W. Dickson was entitled "Some Valuable Conditions Affecting the Manufacture of Ground Wood." This should read "Some Variable Conditions Affecting the Manufacture of Ground Wood."

Ontario's Forestry Problem

The sweeping of the bison from the Western plains is well-nigh paralleled by the removal of the virgin forests from older Ontario. Men are still living who can remember when the greater part of the southern half of the Province was covered with timber of a class which commands famine prices to-day. The sturdy oak, lordly pine, towering elm, and beech, maple, ash, and basswood were found in abundance almost everywhere, while in special localities walnut was also common. Untold quantities of this timber were burned in log heaps; more of it was sold for a song. To-day so little of the original forest remains that some of the most valuable hardwood cannot be obtained in commercial quantities in older Ontario; a few years ago, in a period of fuel scarcity, the stumps of pine trees sold for fuel at a higher price than was secured for the trees which grew upon them.

The wholesale destruction of trees which occurred in the early days of settlement is not the only evil in the case. The Province has been so stripped of forest production that creeks are drying up and the supply of well water has in many places been endangered. In addition to this, the clearing of light soils, unfitted for agricultural purposes, is leaving exposed sandy wastes which are a menace to better land in the neighborhood. The lesson taught by the experience of older Ontario should not be lost on the new area now being opened in the north. In the portion of the Province which has been over-cleared a vigorous policy of re-forestation should be adopted as soon as normal conditions are restored after the war.—Toronto Globe.

WOOD PULP vs. COTTON.

Referring to the controversy which has lately been raging in the press on this subject, a correspondent of our French contemporary, *Le Papier*, points out that it is practically only chemical wood pulp, i.e., cellulose, that is concerned, not mechanical or wood pulp generally. Further, the point at issue is not one that can be properly decided off hand by a few laboratory chemists, whose experience of wood pulp is mainly confined to the handling of a few kilo, or even grammes, for experimental purposes. Some people say that it is impossible to substitute wood pulp for cotton in the manufacture of explosives, but it is never safe to say that it is "impossible" to do so and so, as even if we deem it so ourselves, others may hold quite a different opinion, and what is more, may be able to substantiate it. The glucose forming extract contained in cellulose — one of the objections urged against it by the supporter of the supposed unassailable position of cotton — can be removed by sufficient washing, and in any case can be prevented from fermenting. Polemics of this sort are negligible where supplies of powder are wanted for immediate use, though one can quite understand the preference the Germans show for building up their reserve stocks, as far as possible with explosives derived from cotton, which besides being richer in cellulose than wood, demands much less chemicals for its treatment.—From *World's Paper Trade Review*.

UNITED STATES NOTES

The American Consul-General at Copenhagen reported to the State Department on February 17, that the Norwegian Government has prohibited the exportation of wood pulp and heavy paper.

The Sauquoit Toilet Paper Company of New Hartford, N.Y., has just let the general contract for the erection of a new mill to R. H. Richards & Son, of Utica, N.Y. Two buildings will be constructed, one to be 101 by 143 feet, and the other 58 by 194 feet, and both three stories high. The work will involve the expenditure of about \$100,000.

The Pomeroy Paper Manufacturing Company of Menasha, Wis., is contemplating the erection of an addition, to be of brick and steel construction, 30 x 140 feet, and two stories in height. New equipment will be purchased during the summer.

The paper mill of the Savage Manufacturing Company of Skowhegan, Maine, was totally destroyed by fire during the past fortnight. The mill is a total loss, the only thing saved was the stock house and some office furniture.

It is reported that a large addition is to be built at the Hollingsworth & Whitney pulp mill at Winslow, Ne., during the coming summer. The report is to the effect that at least one large new paper machine is to be installed, and an addition will be made to the beater room that will greatly increase its size.

C. A. Mace, formerly with the Waldorf Box Board Company, St. Paul, Minn., has become associated with the sales department of the Chicago headquarters of C. L. LaBoiteaux Company.

The Eureka Tale Company, wholesale dealers in tale, at 585 Washington street, New York City, has made an assignment to Rudolph A. Seligmann. The company was incorporated in December, 1911, with a capital stock of \$5,000. Charles L. Hirsh, president of the company, filed a petition in bankruptcy on February 3 last.

Improvements are being made at the Rumford, Me., mill of the International Paper Mill, that will add greatly in safeguarding the lives of the employees. All elevators, belts and pulleys are being enclosed in steel screen guards. All stairways have had railings placed on each side, where formerly many had but a rail on one side. Every place throughout the mill that was in any way dangerous will be made safe, if possible.

Violation of the civil section of the Sherman Anti-Trust Law is charged against the Colin Gardner Paper Company and 53 other defendants in a suit which has just been filed in the United States District Court at Cincinnati, Ohio, by the Chicago Oyster Pail Company, and damages in the sum of \$300,000 are sought.

George H. Harvey, secretary of the Gardner-Harvey Paper Company, Middletown, O., who was seriously

injured while out hunting last fall, is able to be up and about, and he is declared by attending physicians to be out of danger.

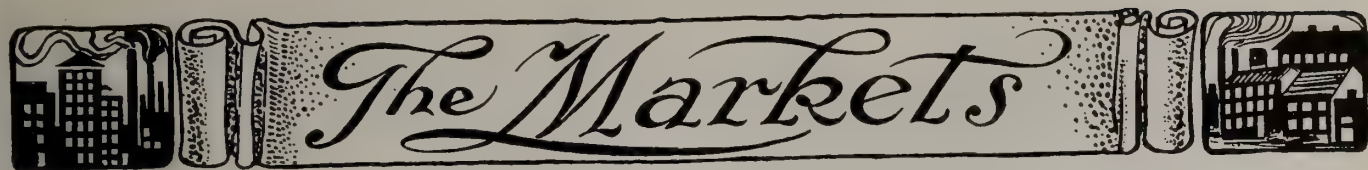
One of the most interesting matters for the trade, from a transportation standpoint, after the general effort to increase rates in Official Classification territory, is the attack which is being made by the Lake Superior Paper Co., Ltd., against carload rates on news-print paper from its mills in Sault St. Marie, Ontario, to destinations in Western Trunkline territory, as involved in a complaint which the company has filed against the M. St. P. and S. S. Marie Ry. and other carriers. They contend that the rates should, in such instance, be 2c. lower in conformity with a previous decision of the Commission on a complaint filed by the same company and involving the same rates. For example, the rate to Omaha, Kansas City, and Sioux City, should be reduced from 26c to 24c; Sioux Falls, S.D., from 27c to 25c; Lincoln, Neb., from 29c to 27c; Topeka, Kan., and Aurora, Mo., from 31c to 29c; Wichita, Kan., from 46c to 44c, and Des Moines, Ia., from 24c to 22c. They also ask for reparation on all shipments moving under the foregoing rates from January 3, 1913.

The Pequot Paper Company, of New London, Conn., was recently granted a certificate of incorporation with a capital stock of \$100,000. The incorporators are George R. Thompson, of Norwich, Conn., Robert B. Harris, of Norwich, Conn., Arthur W. Lavelle, of Roxbury, Mass., Joseph H. Outlear, of Roxbury, Mass., and C. Monroe Mason, of Boston, Mass.

The annual meeting of the Eastern Straw Board Company was held at Versailles, Conn., during the past fortnight. The following officers were elected: Thomas F. Garvan, president; John S. Garvan, vice-president; A. J. Shaw, secretary; Wm. Foulds, treasurer; Wm. Lydall, assistant treasurer. A dividend of 5 per cent was declared on the capital stock.

At the annual election of directors of the Cliff Paper Company of Niagara Falls, N.Y., last week, the following were all re-elected: Walter T. Schoellkopf, Jacob Schoellkopf, George W. Olmsted and W. D. Olmsted, of Buffalo; Arthur C. Hastings, Holyoke, Mass.; Edward M. Grigg, Lockport, and Paul A. Schoellkopf, of this city. These officers were re-elected; President, Jacob F. Schoellkopf; vice-president, Edward M. Grigg; secretary-treasurer, Paul A. Schoellkopf; manager, Arthur C. Hastings.

The directors of the American Writing Paper Co. held their annual meeting at Holyoke, Mass., during the past fortnight. At this meeting it was voted to abolish the office of General Manager, and consolidate the duties of the office with that of the Vice-President. Alfred Leeds, who for the past several years has been General Manager, was elected Vice-President. Arthur C. Hastings was re-elected President; Edwin S. Smith, Secretary; and E. H. Hall, Treasurer. Following the meeting, the Executive Committee of



The Markets

CANADIAN MARKETS

News print continues to be in strong demand, and all the plants are busy. Inquiries from many countries, particularly from England and the United States, continue to come in steadily, and, in many instances, have to be turned down. It is likely that, during the coming year, at least two companies will install more machines. The export business is maintained at a high level, and during the month of November last (which statistics are the latest obtainable), the volume of foreign business reached a new top notch mark, being \$1,753,013. Of this, there was shipped to the United States \$1,425,312. Australia took \$170,745, and New Zealand \$119,759. In the first eight months of the present fiscal year the entire export business in news print aggregated \$11,187,519.

The exports in chemical and mechanical pulp also keep up well, and, in the first eight months of the fiscal year, the former amounted to \$3,868,926, and the latter to \$1,460,707.

The outlook for ground wood is much more promising than it has been for some time, and the market bids fair to become firmer. The prices for both bleached and unbleached sulphite are going higher all the time, and it is understood some mills which have exceeded their contracts, have had to pay as high as one hundred dollars per ton for bleached. Unbleached sulphite still ascends. Mills will only cover for immediate requirements, and just where the situation will end cannot be foretold.

Book bond and writing plants are doing a nice, steady business. It is likely that the writing paper manufacturers of the Dominion will shortly meet and agree on certain trade customs, the same as the Writing Paper Manufacturers Association of America have done. Two recent customs, which have been adopted across the line, that are of interest to Canadian producers, are—that on all printing papers, viz., fine flats, ledgers, bonds, linens and type writer papers there shall be a differential between the price of white and the price of colors in said grades or lines. Members shall not sell to jobbers private watermarks and brands for less than they sell their mill marks and brands of the same grade.

Owing to the decidedly high cost of colors, bleach sulphite rags and other raw materials, there has recently been an increase on all kinds of book, bond, writing and ledger papers from half a cent to two cents on the higher grades. There is every probability that figures will go still higher.

In the toilet and tissue paper line the mills are away behind, and some of them cannot accept any more orders for several weeks, while others do not know which way to turn in order to meet the pressing wants of their customers. In view of recent increases, orders have been coming in freely, as stocks have been low and large purchasers believe in taking matters by the forelock. There was another increase of an average of half a cent a pound in tissues during the past few days, and the augmentation in the last three

months has been from twenty to thirty per cent. In toilet papers the appreciation in values has been five per cent., and there may be another ascent in a short while.

In sympathy with the general trend of events, kraft took another flight a few days ago, there being a raise of forty-five cents a hundred in both glazed and unglazed. All paper mills are running now to good business, and some plants would like to get others to help them out in the matter of wrappings, poster and other lines. There is no No. 2 Manila being made by any of the wrapping paper plants at the present time, it being decided to cut this out and confine production to No. 1 and B grades.

The color question is still growing more acute, and where the situation will end no one can tell. Some of the mills are exchanging colors in order to help one another out, and all are making spare use of their limited stocks. February has been a very good month with the jobbers, who are looking forward to an active spring business. In some lines they are accepting only limited orders, and will not guarantee prices for any protracted period, while others have withdrawn all quotations.

As the prices for all kinds of paper, colors, inks, etc., are constantly going up, many printing and publishing establishments are stocking up and some large orders have recently been placed with many mills. A barrel of yellow aniline dye, which was formerly \$16.50 was sold by a certain firm the other day for \$150.

In paper bags the maximum discount on manilas is now 50, 10 and 5, and on kraft bags, 40 and 5 off list prices. It is rumored that quotations will go higher. The market in all lines of paper, as already stated, is very brisk. There has been another advance in boards of all kinds.

The rag outlook is very strong, in spite of the recently imposed embargo, and scip and news are in active demand, with improved tendency, while krafts, manila and white are soaring rapidly. In practically every line of rags and paper stock there has been an increase during the past few days.

Quotations, f.o.b. Toronto, are:

Paper.

News (rolls) \$1.95 to \$2.05 at mill, in carload lots.
 News (sheets). \$2.15 to \$2.30 at mill, in carload lots.
 Book papers (ton lots), No. 3, 4.50 up.
 Book papers (carload), No. 3, 4.25c to 4.75c.
 Book papers (carload), No. 2, 5.00c.
 Book papers (ton lots), No. 2, 5.25c to 6.00c.
 Book papers (carload) No. 1, 6.00c to 6.50c.
 Book papers (ton lots), No. 1, 6.00c. up.
 Sulphite bonds, 6½ to 8c.
 Writings, 4½c up.
 Grey Browns, \$2.35 to \$2.75.
 Fibre, \$3.75 to \$4.75.
 Manila, B., \$2.85 to \$3.50.
 Manila No. 1, \$3.75 to \$4.75.
 Unglazed Kraft, \$4.70 to \$6.00.
 Glazed Kraft, \$5.25 to \$6.50.
 Tissues, bleached, 75c to 1.10c.

Tissues, unbleached, 50c to 85c.
 Natural greaseproof, 8½c to 10½c.
 Bleached parchymns, 20c to 30c.
 Drug papers, whites and tints, 5c to 7c.
 Paper bags, Manila, 50, 10 and 5 discount.
 Paper bags, kraft, 40 and 5 discount.

Pulp.

Ground wood pulp (at mill), \$16 to \$17.
 Ground wood \$19 to \$23, delivered.
 Sulphite (unbleached), \$52 to \$56, del. in Canada.
 Sulphite (unbleached), \$52 to \$57, delivered in U. S.
 Sulphite (bleached), delivered, \$80 up.
 Sulphate, delivered, \$50 to \$52.

Paper Stock.

White envelope cuttings, \$2.55.
 No. 1 soft white shavings, \$2.25.
 White blanks, \$1.05.
 No. 1 book stock, \$1.05.
 No. 2 book stock, 65c, nominal.
 Ordinary ledger stock, \$1.45.
 Heavy ledger stock, \$1.65.
 No. 1 Manila envelope cuttings, \$1.45.
 No. 1 print Manilas, 85c.
 Folded News, 52½c.
 Over Issues, 52½c.
 Old white cotton, \$3.25.
 No. 1 cleaned mixed paper, 45c.
 No. 1 white skirt cuttings, \$5.75.
 Black overall cuttings, \$1.85.
 Thirds, blues, \$1.85.
 Black linings, \$1.75.
 New linings, flannelettes, \$4.25.
 Ordinary satinets, \$1.65.
 Flock, \$1.80.
 Tailor rags, \$1.65.
 Blue overall cuttings, \$4.00.
 Manila rope, \$3.25.
 No. 1 burlap bagging, \$2.00.

Quotations f.o.b. Montreal are as follows:—

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$50 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders; \$55 to \$60 per ton for small orders.
 No. 1 Book, 5¾c to 6c.
 No. 2 Book, S.C., \$4.75 in large quantities; \$4.85 to \$5.50 in small quantities.
 No. 3 Book, M.F., \$4.25 in large quantities; \$4.75 in small quantities.
 Writings, 5½ to 7½c.
 Sulphite Bond, 6½c to 8½c.
 Writing Manila, 5c to 5½c.
 Cover Papers 6½ to 10c. per lb.
 Colored Posters, 4¾ to 5¼c.

Prices on wrappings now in effect:—

	Carload & Jobbers.	Five tons.	Two tons.	One ton.	Under 1 ton.
Cleaver, per 100 lbs. . .	2.35	2.45	2.55	2.65	2.75
B. Manila, do.	2.75	2.95	3.05	3.15	3.25
Samson B., do.	3.35	3.45	3.55	3.65	3.75
No. 1 Manila, do.	3.75	3.85	3.95	4.05	4.15
No. 2 Manila, do.	3.10	3.20	3.30	3.40	3.50
Invincible Striped Man., do.,	3.75	3.85	3.95	4.05	4.15
Fibre	3.75	3.85	3.95	4.05	4.15
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.					

One Half Small
 ton. ton. lots.

Plain Kraft 4.65 5.00 5.25 5.50
 Glazed Brown Kraft—½c per lb. over price for Plain Kraft.
 Glazed Green Kraft—½c. per lb. over price for Brown Kraft.

Pulp.

Sulphite easy bleaching, \$43 to \$45 per ton.
 News quality, \$39 to \$40 per ton.
 Bleached sulphite, \$54 to \$59 per ton.
 Ground wood, \$20 to \$23, delivered in United States.
 Kraft Pulp, \$39 to \$40.

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine.)

New York, Feb. 25, 1916.

Ground wood pulp continues to strengthen, and is now being held for as high as \$25 per ton, f.o.b. mill. While considerable inquiry is reported current, the market has not yet become as active as it might be. However, indications are that business will develop to a more brisk state within a short time. The consumption of ground wood is now very large. All of the news mills are running at full capacity. The wrapping mills and others which use ground wood are all operating to their limit. Most of these are dependent, now, entirely upon the grinders for pulp, because the water conditions are such as to make the operation of the grinding plants of the paper mills difficult or impossible. There is still a strong demand for export, but this can hardly be considered a factor, because of the utter inability to take advantage of this opportunity. Shipping facilities have constantly been growing worse, instead of showing any signs of improving.

Chemical pulp has shown no inclination to ease off in any way or to decline in price. On the contrary, the market has been steadily growing firmer. The quantity of available stock has been becoming more pronouncedly scarce all of the time. Imports for the past few weeks have been practically of no consequence. With the Baltic Sea closed for the winter, no hope is held for pulp arriving from any of its ports. Spot lots of foreign stock have been reduced to a stage where they amount to very little. Domestic producers have sold the biggest part of their output for the coming year, and are asking big prices for whatever they have for disposal. The fact is that quotations on all chemical pulps have been going higher. Dealers are all holding for the excessive figures. Mills are looking for pulp, but are still trying to "dieker." Many of the paper makers are trying to use substitutes to avoid the effects of the sulphite situation. For the future, it seems that the market must become more acute, and that quotations must go higher.

It has now become evident to importers and others throughout this city that the Swedish embargo on chemical pulp is, to a large extent, an act to protest and take care of the Swedish producers. Now, the foreign pulp men who have contracts at the old prices will find it "impossible" to get licenses for export. Already many of the mills have announced that they would expect part of increased costs of manufacturing and handling over the old prices. This would seem to indicate that the market will remain high for some

time. The English order prohibiting the importation of pulp is still causing considerable conjecture in this vicinity. It is believed that possibly this may mean that domestic consumers will be able to get larger quantities of Canadian pulp. However, this would not be likely to affect prices to any extent. Bleached sulphite is now hard to obtain under 5½c. Stocks of this grade are very low. While bleaching powder has eased a little, it is held as high as 13c. Easy bleaching has been in great demand, on account of the high prices being asked for bleached sulphite. However, easy bleaching is not plentiful, and is now held as high as 3½c. Strong sulphite is very firm at 3c. Kraft pulp is exceedingly acute, and is really hard to obtain. Almost no spot lots are available at less than 3½c. Consumers are facing what seems to be a famine in this pulp.

Rags have been passing through an unusually exciting period. Prices have gone sky-high, changing over night. The market is practically a trader's market. Dealers have been rushing about wild, and have been buying up whatever was available at whatever price was asked. The demand for roofing may be said to be the key to the situation. The roofing mills are very busy, and in great need of stock. So great has been the demand, that the question of price has been no factor in conditions. Stock which sold a little over a year ago at 50c. a hundred pounds is to-day eagerly sought at 2½c a pound. The result has been that such grades as thirds and blues and soiled whites, which ordinarily sell below 2½c are now thrown in with the roofing stock, without being assorted. Consequently, in order to get such grades, the writing mill or other consumer must pay a better price, which will make it worth while to assort them. There appears little doubt that the market will continue to rise. Stocks are far from plentiful. Imports have become so low as to be no factor. From England, little is expected. The embargo will keep out considerable new cuttings and roofing stock. However, it has been calculated that whether embargoes are in force or not, the prospects for getting rag stock from Europe are very small. The foreign countries are conserving their own supplies.

In England, the mills are busy, and will undoubtedly need whatever stock they can get hold of. It is understood that many of the rag dealers are still selling to the powder companies at big prices, and that this fact is creating an unusual scarcity in the market. Baggings are very firm and advancing. Quotations as high as 3c have been reported on gunny bagging. Manila rope has been quoted as high as 4c.

Waste papers are stronger and in better demand than they have been at any time within the recent history of the trade. Just now, the demand for boards of practically every kind is remarkably active, which fact has been instrumental in livening the market, which is largely responsible for the present high prices. Now, however, a new factor has presented itself, and unusual demand for paper stock. The consumers of rag and sulphite stock, and endeavoring to escape the conditions in the other markets are substituting waste papers. This has made the demand for soft and hard white shavings great and has "boosted" all of the other grades including books. Krafts are hard to secure at any price. Mixed newspapers are being held at about 45c.

The paper market has been active and advancing without any appearance of cessation. The conditions

described above in each of the raw materials, have been responsible for an uncertainty which actually makes the selling of paper precarious. Notices of price changes are common, jobbers being unable to take business without first communicating with the mills. Paper makers are very busy. The fact is that all of the mills in this country are operating at capacity with plenty of orders to keep them going for six weeks or more. Many mills are refusing to take on business, fearing that the cost of manufacture will advance before delivery is possible. Others are taking business without specifying date of delivery. The prospects are that the market will continue to advance for the near future.

Newsprint has lost none of its firmness. It is believed the past few months have done much to stabilize the market for all time to come, and that there will be no more unfair competition with Canadians. Tissues are very firm. Few, if any mills, are taking on business. Quotations as high as 52½c for carloads of pure white, have been heard. Krafts are scarce and held as high as 5½c. Manilas and fibres are active and advancing. Paper bags are very firm. Business in bags is better than ever before. Many makers are unable to take business. Book papers are holding firm to their advanced prices. Boards are selling well at greatly advanced figures.

The following quotations are purely nominal:—

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$16 to \$17, delivered.
Ground Wood, No. 2, \$14.50 to \$15.50, delivered.
Unbleached Sulphite, dom., 2.50c to 2.85c, delivered.
Easy bleaching impt., 2.85 to 3.25c, ex-dock, N.Y.
Bleached Sulphate, impt., 2.80c to 2.90c, ex-dock, N.Y.
Bleached Sulphite, impt., 4¼ to 5½c, ex-dock, N.Y.
Unbleached Sulphite, impt., 2.50 to 3.00c, ex-dock, New York.
Bleached Sulphate, impt., 2.80c to 3.00c, ex-dock, N.Y.
Kraft Pulp, impt., 3 to 3½c.

Paper.

News, Rolls, transient business, \$2.10 to \$2.25.
News, Sheets, \$2.30 to \$2.45, f.o.b.
News, Rolls, contract renewals, \$2.10 to \$2.20, f.o.b.
News, side runs, \$2.00 to \$2.15, f.o.b.
Book papers, car lots, S. & S.C., \$45 to \$46 f.o.b.
Writing paper, extra superfine, 14c. to 17c., del. east of Miss. River.

Writing paper, superfine, 12c to 13c., del. east Miss R.
Writing paper, No. 1 fine, 9½c, del. east Miss River.
Writing paper, No. 2, fine, 8½c, del. east Miss River.
Writing paper, engine sized, 6 to 9c, east Miss. R.
Bond paper, 5½c to 24c, delivered east of Miss. R.
Ledger paper, 5½c to 25c, delivered east of Miss R.
Linen paper, 9c to 18c, delivered east of Miss River.
Manila jute, 4¾c to 5c, delivered.
Manila, wood, 2.50 to 4c, delivered.
Kraft, No. 1 (dom.), 3.75 to 5½c. f.o.b., New York.
Kraft, No. 2, (dom.), 3.45 to 3.75c., f.o.b., New York.
Kraft, imported, 3.95c to 5½c, ex dock, New York.
Boxboards, news, \$29.00 per ton, delivered.
Wood pulp board, \$40 to \$42.50 per ton, delivered.
Boxboards, straw, \$27.00 per ton, delivered.
Boxboards, chip, \$26.00 per ton delivered.
Tissue, fourdrinier, 50c. f.o.b. New York.
Tissue, white, cylinder, 47½ to 50c, f.o.b., New York.

DEMAND FOR PRINT PAPER IN NEW ZEALAND.

There has been a serious shortage of print paper in New Zealand owing to the increased demand on account of the increased circulation of newspapers, and the demand is on the increase. The imports for the first ten months of 1915 were valued at \$902,765, against \$872,860 for the same period in 1914.

Previous to 1914 Great Britain supplied more than any other country, with Canada next, but now Canada is well in the lead. The urgency became so great that the newspaper interests in this country chartered a steamer and sent it to British Columbia for a 3,000-ton cargo of print paper. Print paper is dutiable at 21 per cent ad valorem under the general tariff, with a reduction of 20 per cent ad valorem if imported from the British dominions; but even at this American interests might get some business here since it is a question whether Canada will be able to meet the demands.

Print paper is quoted here now at 4 to 5 cents per pound wholesale.—(U. S. Consular Report.)

PAPER PACKING TWINE.

There is an increasing demand in Germany for paper twine, the raw material for the manufacture of packing twine from hemp or jute being excessively scarce. The Papier Zeitung has reported on some specimens of paper twine and cord as follows:

The cord is spun from strips of brown or white craped thin cellulose paper and is of 1.5 to 2.5 millimeters in thickness. Its breaking strength cannot be compared with hempen cord of the same thickness, but it will answer for many purposes, and as its cost is correspondingly lower, there is at present a lively demand for this product. The few mills that are making this paper string cannot by any means supply the demand.

COLORING INK SCARCE.

Scarcity of dye materials for printing inks, due to the war, has caused one technical magazine, which for years has used a distinctive red cover, to resort to American substitutes. These have been so far from satisfactory that editorial explanation of the altered color of the magazines' cover has been made in its columns. Many other magazines have experienced similar embarrassment.—Popular Mechanics.

LOGWOOD SUPPLIES FOR CANADA.

The situation with regard to the shipment of logwoods and dyes from Jamaica has been at last cleared up and Jamaica has now issued general licenses allowing the shipment of wood chips and extracts to all British, French, United States and Italian ports.

Canadian interests have been secured in so far as what is necessary for their reasonable requirements from the United States. Logwood is permitted free exportation to Canada.

A HANDY CALCULATOR.

The Pusey and Jones Company, of Wilmington, Delaware, have just issued a most useful and convenient Paper Machine Production Calculator. Directions how to use the device accompany it but the ordinary wide-awake paper maker will doubtless know how to use it. His chief trouble heretofore has been to get hold of such a card.

WHITING MAKES PHOTO PAPER.

After months of experimenting in endeavoring to manufacture a paper that will float an emulsion for the purpose of finishing pictures for photographic work, Mr. George A. Whiting, Menasha, Wis., has finally succeeded in the producing of as fine a grade of paper for this purpose as any manufactured in France or Germany, where the greater amount comes from. His Plover mill at Stevens Point, Wis., will be one of three in the United States to make a photographic paper. Before the present war in Europe, the picture papers from that country were used almost exclusively. The finish of the paper depends a great deal upon the quality of water used and the proper quality is found in the vicinity of Stevens Point. — The Paper Dealer.

THE GERMAN MATCH INDUSTRY.

In 1833 Johann Friedrich Kummerer, of Wurttemberg, invented phosphorus matches. Ten years later the first match factories were established in the Harz Mountains, in the neighborhood of Brunswick. At first matches cost \$3 to \$3.75 per thousand. The production reached its highest point at the beginning of the present century. In 1901 the total production of German matches were 205,400,000,000. After the introduction of the tax of October 1, 1909, the production considerably decreased. In 1910 it only amounted to 59,302,000,000 matches. The introduction of substitutes and electric lighting contributed to the decrease. The manufacture of matches has been affected through the want of the necessary wood, the aspen and trembling poplar being used, the importation of which, principally from Russia, has been cut off. These kinds of wood absorb paraffine easily. In their place pine is used, as it was formerly for phosphorus matches.

PERUVIAN MATCH INDUSTRY.

To protect its match industry, Peruvian congress passed bill for duty on imported matches of 50 cents a kilogram in 1916, 30 in 1917 and 20 in 1918.

WOOD-PULP IN JAPAN.

The Acting Trade Commissioner at Yokohama has informed the Department of Trade and Commerce that a new company to be called the Nippon Kwagaku Kaisha is being organized in Japan, with a capital of 3,000,000 yen. The principal object of the company will be to manufacture wood-pulp in Karafuto (Japanese Saghalien), where it is said that felling rights have been obtained over large tracts of forest. It is intended to set up a factory capable of producing about 12,000 tons of pulp a year.

A SUBSTITUTE FOR LARD.

W. R. Brown, treasurer of Berlin Mills, in statement to Canadian Forestry Association stated that his company had developed a by-product from pulpwood, which was to be marketed as a substitute for lard.

UNCLE SAM'S BIGGEST INDUSTRY.

Lumbering, with its 48,000 saw mills and 605,000 men to operate them, is considered the biggest manufacturing industry in the United States.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Air Compressors

Blethen, Hugh R., New York
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Air Hoists

Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.

Bags

Smart-Woods Ltd., Montreal, Que.

Barkes

Bezner, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Waterous Engine Works Co. Ltd., Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Tippet Arthur P. & Co., Montreal, Can.

Belting

Can. Fairbanks-Morse Co., Ltd., Montreal, Canada
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Can.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones and Glasco, St. Nicholas Building, Montreal
Reddaway, F. & Co., Montreal, Can.

Belt Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio

Bleaching Powders

Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Can.
Winn & Holland, Montreal, Can.

Blowers

Sherbrooke Mach. Co., Sherbrooke, Que.

Boilers

Canadian Allis-Chalmers, Ltd., Toronto
Jenckes Machine Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Brass Wire Cloth, Fourdrinier Wires

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier Street, Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Cable Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calendar Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Carriers

Northern Crane Works, Walkerville, Ont.

Chain Crane

Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Chain Blocks

Blethen, Hugh R., New York, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio

Chain Conveyors

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller)

Jones and Glasco, St. Nicholas Building, Montreal

Change Speed Gears

Jones and Glasco, St. Nicholas Building, Montreal

Chemicals, Colors, Etc.

Brunner, Mond & Co., Montreal, Can.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet A. P. & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay

China Clay Co., Manchester, England
Klipstein, A. & Co., St. Peter Street, Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Chippers

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Valley Iron Works, Appleton, Wis.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens

Bezner, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glasco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes

Blethen Hugh R., New York, N.Y.
Hamilton, Wm Co., Ltd. Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes—Overhead Travelling

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Conveying Machinery

Caldwell, H. W. & Son Co., Chicago, Ill.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jeffrey Mfg. Co., Montreal, Can.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Process Engineers, Ltd., Montreal, Can.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures

Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Couplings

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glasco, St. Nicholas Building, Montreal
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Cut Gears

Jones and Glasco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.

Cylinders

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Cylinder Moulds

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Johnson & Sons, C. H., St. Henry, Montreal, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining

Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Process Engineers, Ltd., Montreal, Can.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters

Pusey & Jones Company, Wilmington, Del.

Digester Gauges

Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms

Snell, Samuel, Co., Holyoke, Mass.

Dryers

Bertram Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Electric Lighting and Power Supplies
Forman, John, 248 Craig Street W., Montreal

Engines

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators

Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Scott, Ernest & Co., Fall River, Mass.

Exhausters

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery

Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Ltd., London, Eng.
Process Engineers Ltd., Montreal, Can.
Pusey & Jones Company, Wilmington, Del.

Exporters

Parsons Trading Co., New York, N.Y.

Felts

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Mont.

MILL SUPPLIES---Continued

- Peritt, Joseph & Sons, -Manchester. Eng**
Spencer, J. M. & Sons, Bury, England.
Tippett Arthur P. & Co., Montreal, Can
- Filters**
 Chambers Ltd., 152 Bay Street, Toronto.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.
 Pusey & Jones Company, Wilmington, Del.
- Friction Hoists**
 Glens Falls Machine Works, Glens Falls, N.Y.
 Hamilton, Wm., Co., Peterboro, Can.
 Jenckes Machine Co., Sherbrooke, Que.
 Pusey & Jones Company, Wilmington, Del.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co. Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
- Gauges**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Generators and Transformers**
 Chambers Ltd., 152 Bay Street, Toronto.
 Siemens Co., of Canada, Ltd., Montreal, Can.
- Grinders**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Hand Power.**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Helicoid Conveyor**
 H. W. Caldwell & Son Co., Chicago.
- Hoists.**
 Blethen, Hugh R., New York, N.Y.
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
 Northern Crane Works Limited, Walkerville, Ont.
- Hoists—Chain Electric and Pneumatic**
 Blethen, Hugh R., New York, N.Y.
- Iron Pulleys**
 H. W. Caldwell & Son Co., Chicago.
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Jordan Engines**
 Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.
- Knives**
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Crookes, Roberts & Co., Sheffield, Eng.
 Hay, Peter, Knife Co., Galt, Can.
 Tippet, A. P. & Co., Montreal, Can.
- Kollergangs**
 Bertrams Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Pusey & Jones Company, Wilmington, Del.
- Laying Machines**
 Chambers, Ltd., Toronto.
 Collis & Sons, J., London, Eng.
- Locomotives, Electric, Storage Battery**
 The Jeffrey Mfg. Co., Columbus, Ohio
- Paper Stock, Etc.**
 Hough, R., London, England.
 Pullan, E., 490 Adelaide Street, W., Toronto, Can.
- Paper and Pulp Machinery**
 Beloit Iron Works, Beloit, Wis.
 Bentley & Jackson, Bury, England.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertram's, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal.
 Carthage Machine Co., Carthage, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto, Can.
 Dillon Machine Co., Lawrence, Mass.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Mach. Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Green Bay Barker Co., Green Bay, Wis.
 Hamilton, Wm., Co., Peterboro, Can.
 Harmon Machine Co., Watertown, N.Y.
 Jenckes Machine Co., Sherbrooke, Que.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Can.
 Marx, J. & Co. London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Pusey-Jones Co., Wilmington, Del.
 Rice, Barton & Fales Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
 Smith, S. Morgan, Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, Eng.
 Waterous Engine Works Co., Ltd., Brantford, Can.
 Westbye, P. P., Peterboro, Can.
- Paper Machine Tachometers**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Paper Tester**
 Chambers Ltd., 152 Bay Street, Toronto.
 Marshall, T. J. & Co., Stoke Newington, London, England.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pneumatic Thickeners**
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
- Presses**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Can.
 Chambers Ltd., 152 Bay Street, Toronto.
- Pneumatic Chain Blocks**
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Press Rolls**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 Process Engineers Limited, Montreal, Can.
- Pusey & Jones Company, Wilmington, Del**
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulp Stones**
 Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.
- Pumps**
 Bertrams Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Allis-Chalmers, Ltd., Toronto, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Chamberlaine Ltd., 152 Bay Street, Toronto.
 Dillon Machine Co., Lawrence, Mass.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Hamilton, Wm., Co., Peterboro, Can.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Pusey & Jones Company, Wilmington, Del.
 Smart-Turner Machine Co., Hamilton, Can.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Recording Gauges**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Recording Thermometers**
 Schaeffer & Budenberg, Brooklyn, N.Y.
- Refiners**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Pusey & Jones Company, Wilmington, Del.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Ma
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co. Ltd., Brantford, Can.
- Rope, Cotton and Manila**
 Jones and Glassco, St. Nicholas Building, Montreal
- Rope Wheels**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Rosin Size**
 Fox, Stockell & Co., London, Eng.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- Rosin Size Boilers and Dissolvers**
 Process Engineers, Ltd., Montreal, Can.
- Rotary Sulphur Furnaces**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Can.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Runways—Hand operated**
 Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Save-Alls**
 Pusey & Jones Company, Wilmington, Del.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Can.
- Screen Plates**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Screens**
 Bertrams Ltd., Edinburgh, Scotland.
 Bezner, Albert, 299 Broadway, New York City
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Chambers Ltd., 152 Bay Street, Toronto.
 Glens Falls Mach. Wks., Glens Falls, N.Y.
 Harmon Machine Co., Watertown, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio
 Jenckes Machine Co., Sherbrooke, Que.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 Tippet Arthur P. & Co., Montreal, Can.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co. Ltd., Brantford, Can.
 Westbye, P. P., Peterboro, Can.
- Shredders**
 The Jeffrey Mfg. Co., Columbus, Ohio
- Slitters and Re-Winders**
 Bertrams Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Chambers Ltd., 152 Bay Street, Toronto.
 Moore & White Co., Philadelphia, Pa.
 Pusey & Jones Company, Wilmington, Del.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
- Sprockets**
 The Jeffrey Mfg. Co., Columbus, Ohio
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Split Pulleys—Wood and Steel**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Jeffrey Mfg. Co., Columbus, Ohio
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 William Hamilton Company, Ltd., Peterborough, Ont.
- Spiral Conveyor**
 Dodge Mfg. Co., Ltd., Toronto and Montreal
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Straw Cutters**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
- Straw Dusters**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.
- Strawboard Making Machines**
 Bertrams Ltd., Edinburgh, Scotland.
 Chambers Ltd., 152 Bay Street, Toronto.

MILL SUPPLIES---Continued

- Steam Regulator**
Pickles, W. F. Buckland, Conn.
- Steel Barrels**
The Smart Turner Machine Co., Hamilton, Ont.
- Steel Drums**
The Smart Turner Machine Co., Hamilton, Ont.
- Stuff Chests**
The Watrous Engine Works Co., Limited Brantford, Ont.
- Suction Couch**
Process Engineers Ltd., Montreal, Can.
- Sulphite Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphate Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphur**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co. Watertown, N.Y.
- Tachometers (Hand and Stationary)**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Tanks**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Thermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Transmission Machinery**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Limited, Toronto.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones & Glassco, Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Transmission Rope**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Travelling Cranes**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart Turner Machine Co., Ltd., Hamilton, Ont.
- Trolleys**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turher Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Turbines**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc. New York, N.Y.
Voith, J. M. Wurttemberg, Germany.
William Hamilton Company, Ltd., Peterborough, Ont.
- Water Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
- Wire Cloth for Paper Machines**
Chambers, Ltd., Toronto.
Christie, Geo. Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Weatbye, P. P., Peterboro, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste**
Hough, R., London, England.
- Wet Machines**
Bertrams Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co. Ltd., Brantford Ont.
- Wood Preparing Machinery**
Bezner, Albert, 299 Broadway, New York City

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R. Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- News Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co., (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.

Kraft

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Waysagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver & C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Riordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp and Paper Mills Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

- Bag**
Eddy, The E. B. Co., Ltd., Hull, P. Q.
Lincoln Paper Mills Co., Ltd., Merritt, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

- Binders' Board**
McArthur, Alex. & Co., Montreal.

- Blotting**
Canada Paper Co., Montreal.

- Bono**
Canada Paper Co., Ltd., Montreal.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho

- Canada Paper Co., Ltd., Montreal
- Eddy Co., The E. B., Ltd., Hull, Que.
- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

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Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal & Toronto.

Building and Sheathing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
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Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

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Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper

Lazier Paper Mills, Ltd., Belleville,
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

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Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope

Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
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Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
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Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

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Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

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Walker, J. R. & Co., Montreal, Que.

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Anglo-Newfoundland Development Co., Ltd., Grand Falls, New
foundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
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Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
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Laurentide Co., Ltd., Grand Mere, Que.
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Powell River Co. Ltd., Powell River, B.C.
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Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
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Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
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Western Paper Mills, Ltd., Vancouver, B.C.
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Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B. Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
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Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
See also Kraft.

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Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

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Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

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Minister of Lands, Forests and Mines

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Alphabetical List of Advertisers

See Classified List on page 51

Unpaged advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	62

B

Bates & Innes.....	68
Bathurst Rubber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6

C

Caldwell, H. W. & Son Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Company, Ltd.....	13
Capital Wire Cloth Mfg. Co. Ltd.....	7
Carthage Machine Co.....	14
Chambers, Ltd.....	7
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	
Churchill & Sim.....	62
Crookes, Roberts & Co.....	13
Crossley T. L.....	65

D

DeCew, J. A.....	65
Dean & Son.....	
Dominion Belting Co.....	65
Dominion Pulp Woods Limits... ..	54
Dominion Textile Co., Ltd.....	59
Dunlop, Wm. M.	65

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	61
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.	
J. Ford & Company.....	66

G

Glens Falls Machine Works ...	6
-------------------------------	---

H

Hamilton, Wm., Co., Ltd.....	
Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	62
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg Co.....	
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H....	18
Johnson Chas.....	4
Jones, E. D. & Sons. Co.....	17
Jones & Glassco.....	

K

Klipstein, A. & Co., Ltd.....	7
-------------------------------	---

L

Lauderburn, D. E.....	64
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Marx, J. & C.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15
McIntyre & Hinzke.....	64

N

National Paper Co.....	63
Northern Crane Works Ltd....	62
Norwood Engineering Co. of Can Ltd	60

O

Ontario Pulp Wood Limits.	67
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Prestons Digester Lining Co., Ltd.....	16
Process Engineers. Ltd.....	65
Provincial Paper Mills Co. Ltd....	61
Pullan, E.....	65
Pulp & Paper Trading Co.,	65

R

Rice, Barton & Falés Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co. Ltd.....	66

S

Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works	17
Schaeffer & Budenberg Mfg. Co	
Schlick, Leo.....	64
Scott, Ernest & Co.....	
Sherbrooke Machinery Co., Ltd..	5
Smart Turner Machine Co.....	68
Smith, S. Morgan Co.....	
Snell, Samuel Co.....	62
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.	64

T

Taylor, J. A.	
Ticonderoga Machine Works....	6
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

W

Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co, Ltd..	4
Waterous Engine Works Co., Ltd	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	62
Winn & Holland.....	62

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Acid Yellow G. - - - - -	200 "		4.50
Acid Yellow T. - - - - -	119 "		4.50
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Fast Yellow 2 G. - - - - -	117 "	Bayer	4.50
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Scarlet DC. - - - - -	345 "	Cassella	8.00
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Anthracyanine Grey GL. - - - - -	47 "	Bayer	5.00
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Acid Grey 768M - - - - -	50 "	Cassella	5.00
Acid Grey 769M - - - - -	20 "	Cassella	5.00
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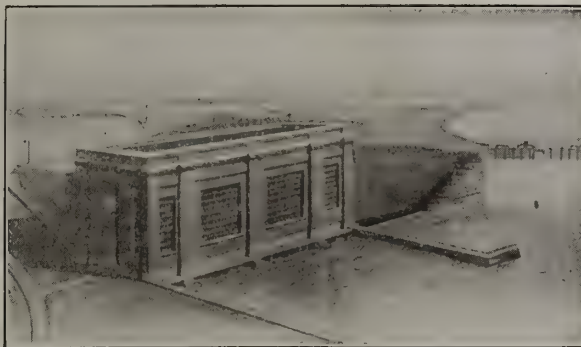
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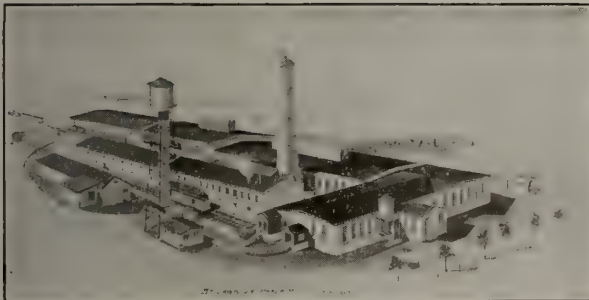
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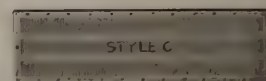
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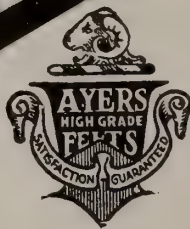
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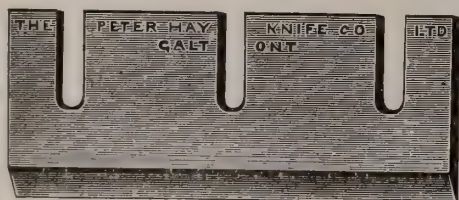
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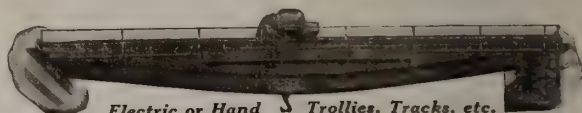
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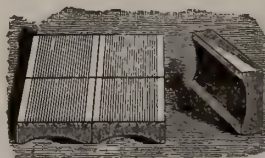
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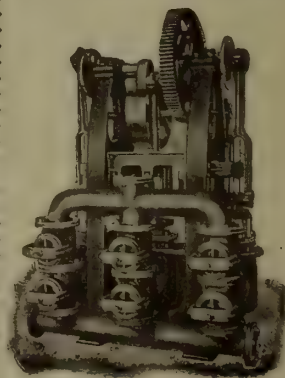


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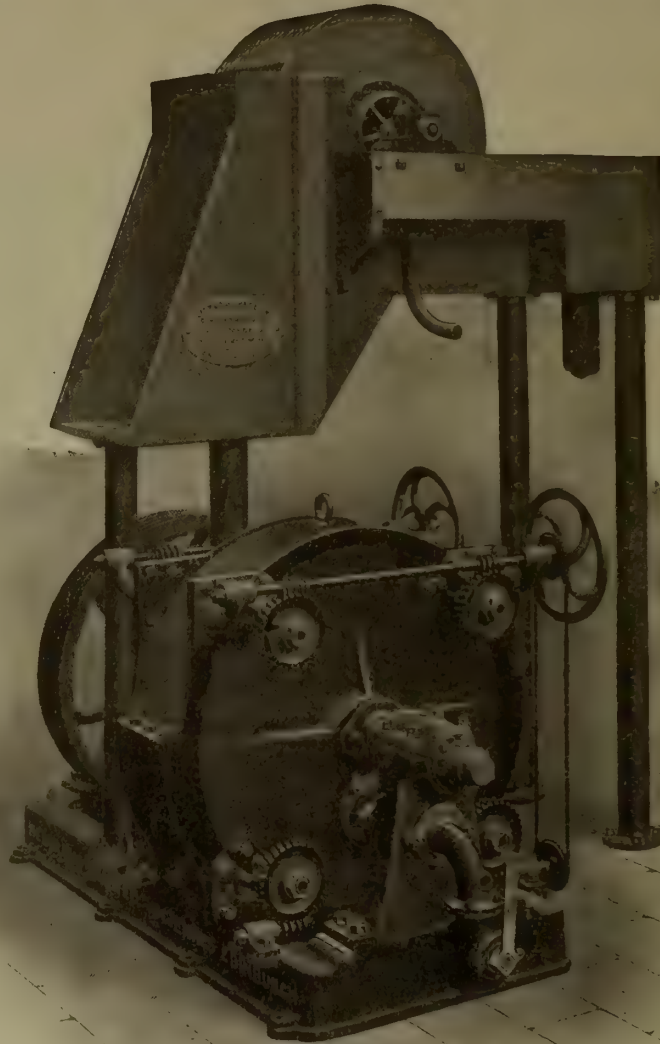
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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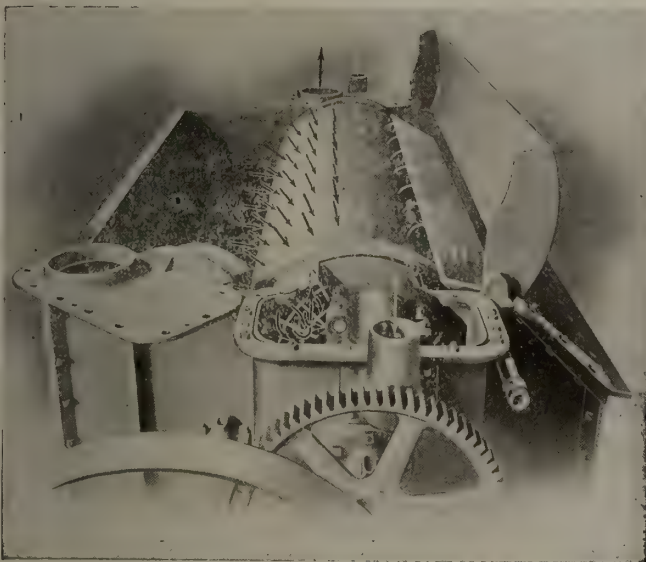
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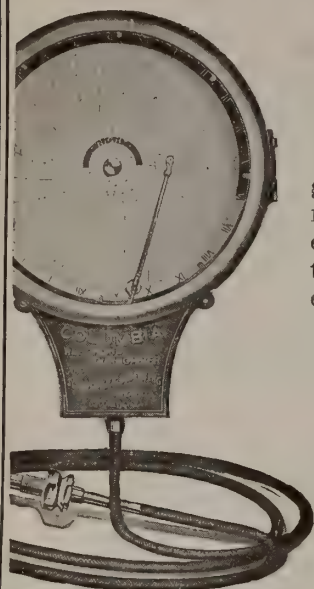
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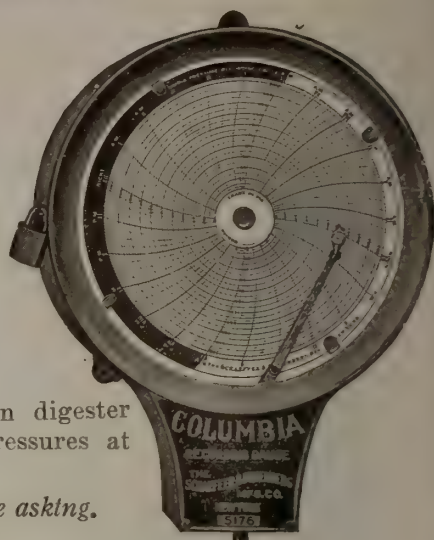
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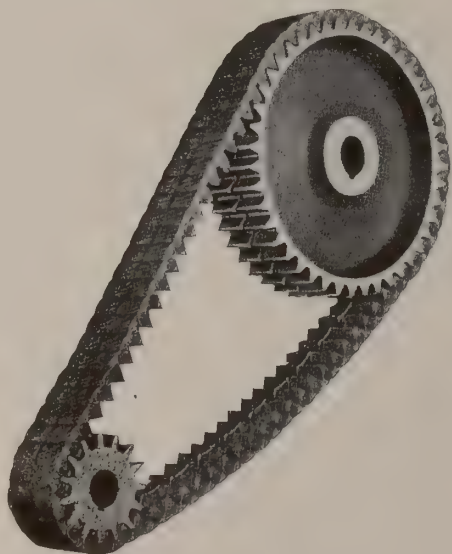


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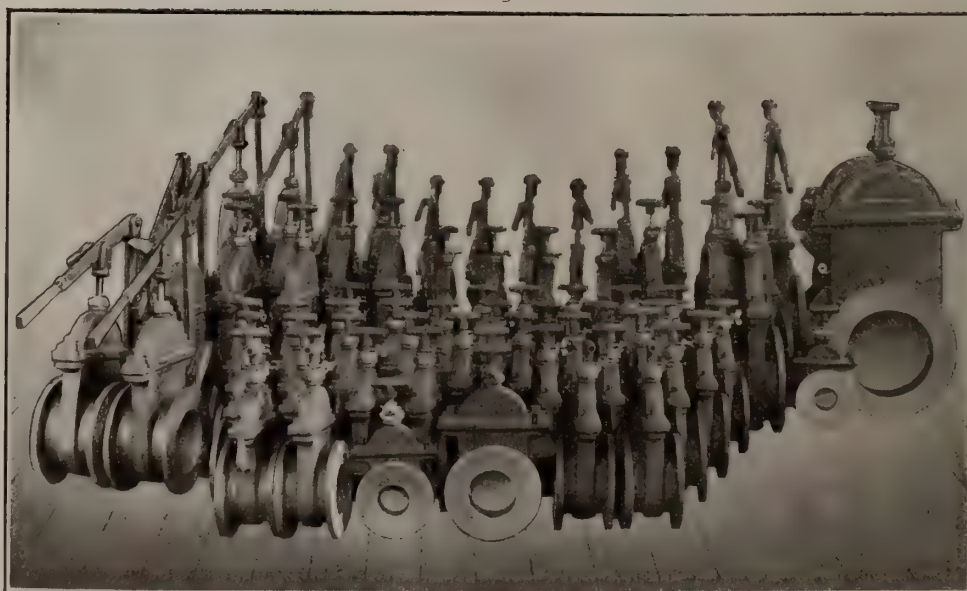


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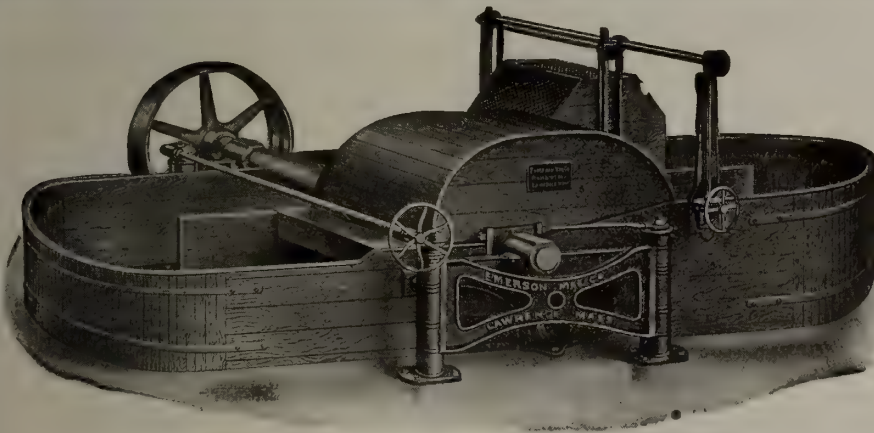
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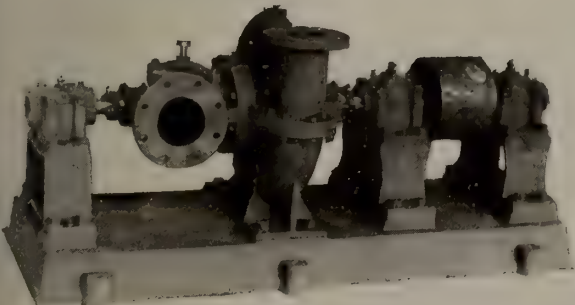
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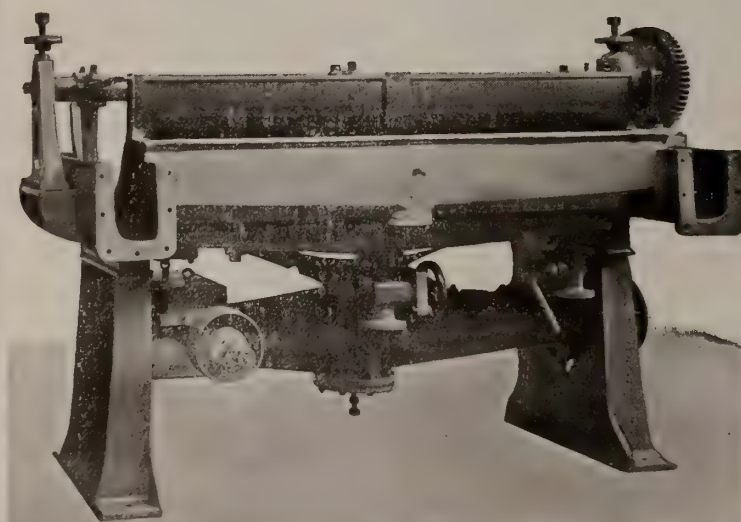
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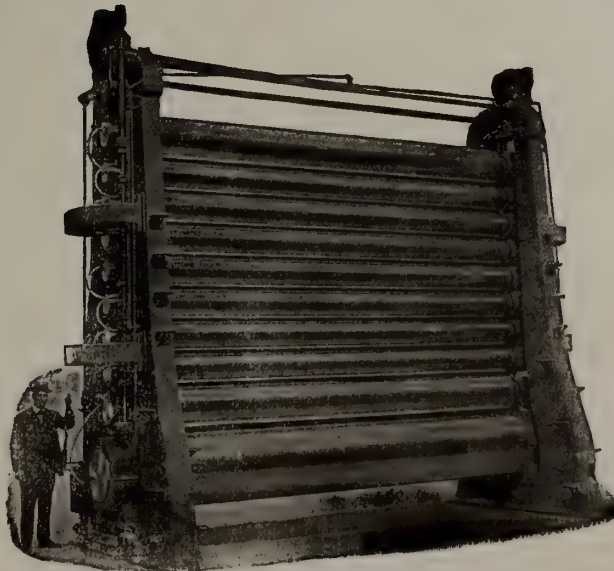
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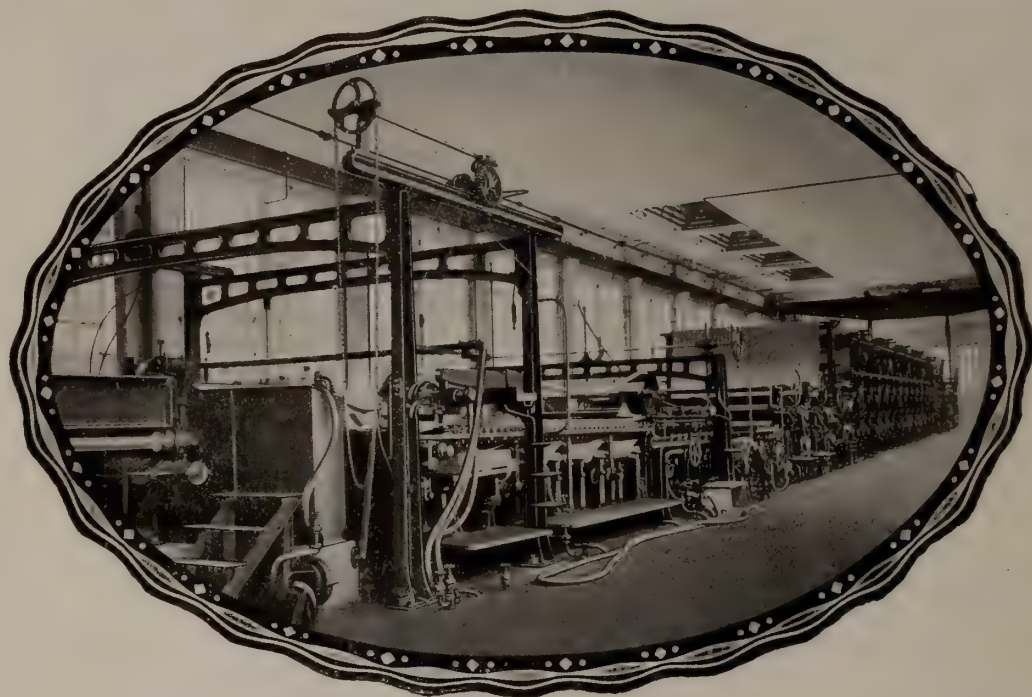


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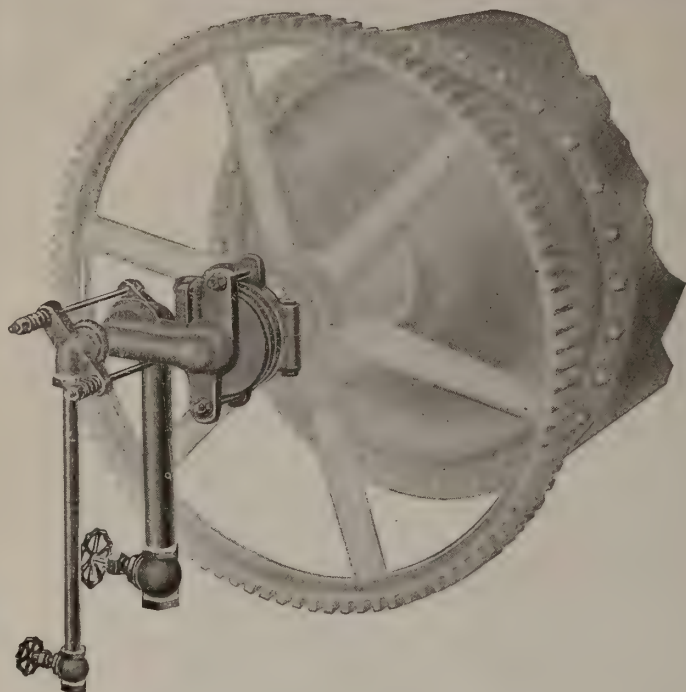
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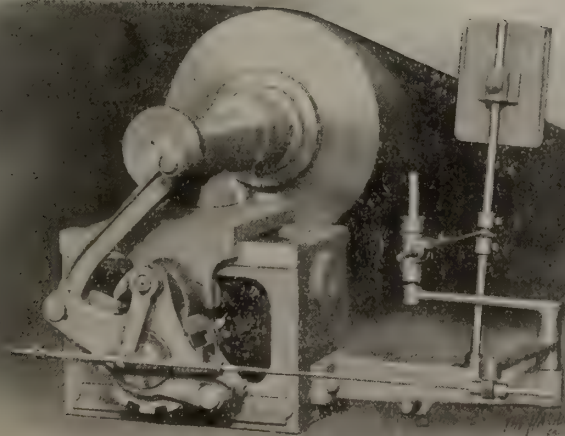
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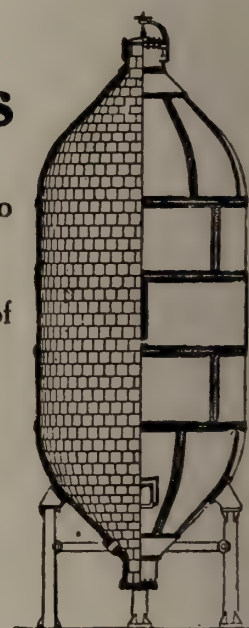
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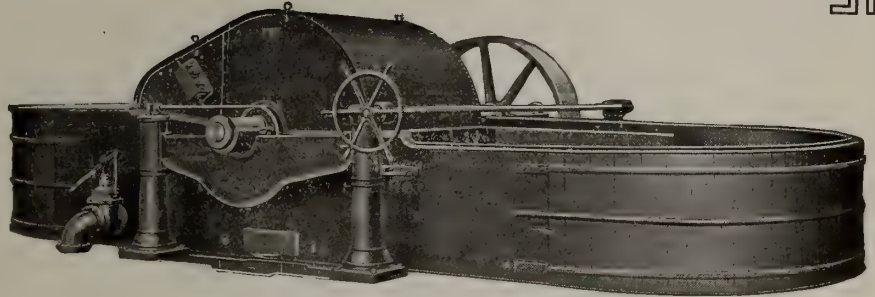
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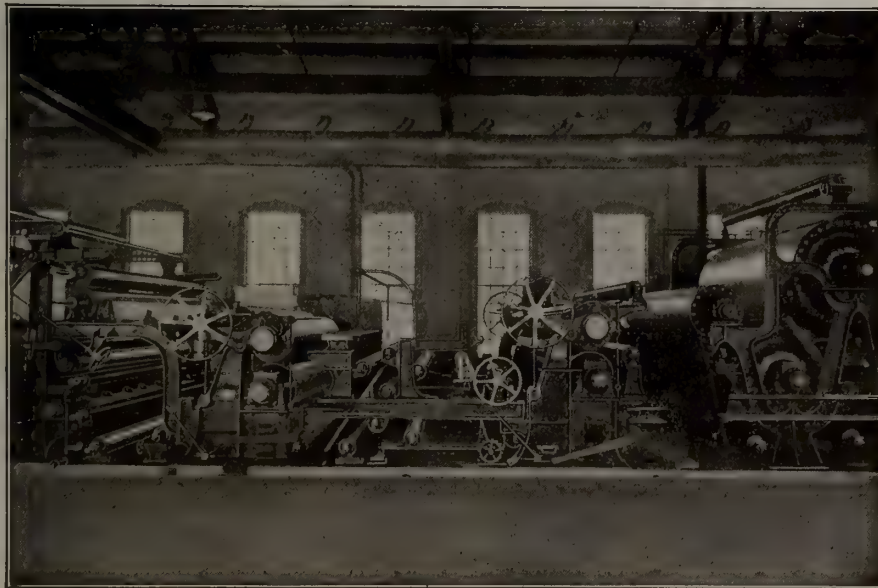
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Pulp and Paper Magazine

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
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VOL. XIII.

MONTREAL, MARCH 15, 1916

No. 6

Preparedness

Without unduly patting Pulp and Paper Makers on the back, we are convinced that they are doing more than the men in any other industry in Canada to organize and get ready for Big Business after the war.

Everywhere throughout the Dominion manufacturers, exporters, transportation men and Government officials have in view *Der Tag*—a day when Canadian goods will largely replace German-made articles in the markets of the world. To accomplish this requires organization, care in the making and marketing of goods, a familiarity with foreign markets, and an intimate knowledge of the latest achievements in chemical research and scientific development. To an unusual extent these things have been accomplished by the members of the Canadian Pulp and Paper Association. The organization, which includes ninety-five per cent of the paper makers of the Dominion, is ably officered, and as a result has accomplished wonders in a comparatively short time. A further asset is found in the Forest Products Laboratory at McGill, where Dr. Bates and his assistants are carrying on research work that is proving of inestimable benefit to the members of the Association, and to the country as a whole.

These things spell preparedness. They mean that when the present titanic struggle is over and the nations of the world turn to the arts of peace and try to bring order out of the chaos caused by the war, that those industries or individuals who got ready beforehand will reap the greatest benefits. In a very real sense Canada can become the world's pulp and paper centre. It rests largely with the men in the industry.

Progress Should be Sure

The unusual activity of practically all pulp and paper mills in the Dominion is something for which Canadians should be very grateful. It is true that raw materials are very high, so high, indeed, that the question of price in some cases has practically to be disregarded, and the material obtained at whatever the cost. But the same is true of practically every industry in the land. Manufacturers report an increase in cost of raw materials of from 30 to 600 per cent, and the only task is to find the wherewithal to keep the mills going.

Busy plants will mean far more to the country than would appear on the surface. As a young manufacturing nation Canada has long needed the impetus of a strong demand to show our manufacturers and people alike what can really be accomplished within our borders. In industry, as in human affairs, there is a certain point below which results seem to be far from commensurate with the effort expended. To be able to pass that point gives confidence and zeal which is not easily overcome.

With normally good times in the future, Canadian pulp and paper manufacturers should be in a position to show up to much better advantage in a national industrial sense, than ever before.

The most insidious danger which has to be guarded against is the flotation of unstable and unbusiness-like companies. In due course there will be ample room for plants which will double Canada's present output. But investors and the industry itself must beware of the company whose chief purpose has been served when the "flotation" has been completed and the "promoter" enriched.

War to the Finish

The gauntlet thrown down by Lord Shaughnessy at the recruiting meeting held in the Board of Trade, Montreal, a few days ago, must be taken up by the business men of the country. The President of the Canadian Pacific Railway was invited to address the business men of Montreal with the idea of saying and doing something that would stimulate recruiting, instead of that, he threw a bombshell into the camp by criticizing the present methods and recommending that no more men be sent to the front at the present time lest it should interfere with the industrial, economic and transportation interests of the country.

We are satisfied that the pulp and paper interests of the country will not agree with the head of the Canadian Pacific Railway Company. The large Roll of Honor on the following pages is an eloquent plea that we should stand by the men who have gone to the front and see this thing through to a successful finish, no matter what it costs in men, money, munitions or the disorganization of our industrial system. The Pulp and Paper Magazine does not agree with all that has been said and done by the Militia Department at Ottawa. It believes that there are certain defects which might be remedied, as, for example, the long delay incidental to the sending forward of the troops. Men enlist to fight the Germans, not to learn the Goose Step, and their first enthusiasm cools off when they are forced to remain around for several months after enlisting. Apart from that, and the advisability of putting into force a moratorium for soldiers, the Militia Department has done fairly well considering the many difficulties under which they had to operate.

We feel that it was neither the time nor the place for criticism such as that made by Lord Shaughnessy. Statements from a man of his standing in the country are sure to be magnified by the enemy and will give untold encouragement to the Germans. If he must make such criticisms, far better for him to make them in private to the Premier or to the Minister of Militia. In this respect Lord Shaughnessy might be thankful that he is in Canada, and not in Germany. Can you imagine Herr Ballin, head of the Hamburg-American line, announcing at a public meeting in Germany, that the Kaiser should send no more men to the front lest it interfere with the industrial conditions of that country! The answer would be a firing party at dawn.

In Germany, and in every other country, industry and commerce is taking a secondary place to the prosecution of the war. We believe in carrying on the war with the minimum interference to our industrial welfare, but naturally in a world war such as this, it is impossible to carry on "business as usual." There must be some interference with the legitimate channels of trade. That is to be expected, and we would not be playing our part unless we cheerfully submitted

to these interferences and hardships. The Canadian Pacific Railway, over which Baron Shaughnessy presides, is paying 10 per cent in dividends. If those dividends were cut in two, shareholders should not complain during war times. Canada is in this war to the finish, and neither the protests nor the pleadings of Lord Shaughnessy and others like him, will make the country hesitate. It is a fight of civilization against barbarism, and no one worthy of the name will hesitate about making any sacrifice, material or otherwise.

Difficulties in Great Britain

The same peculiar condition which has forced Great Britain into the utilization of her standing timber, which has remained practically untouched in a lumbering sense for generations, and has caused the recruiting of Canadian lumbermen to make the harvest, has also brought about a remarkable situation in the British paper industry.

The shortage of ocean freights has moved the British Government to curtail the imports of many raw materials, among which are those used in the manufacture of paper. It is also proposed to limit the output of paper. This restriction, the details of which are still under official consideration, will affect the newspaper trade, the book trade, the stationery trade, and every industry in connection with which the use of paper is essential. The Papermakers' Association of Great Britain and Ireland has adopted the patriotic attitude of declaring that, if in the opinion of His Majesty's advisors it is necessary to curtail the import of raw material, and also the export of the manufactured article, in order to release shipping for national needs, the trade which, in a corporate capacity it represents, will cheerfully acquiesce in the arrangement. At the same time the fact is not to be disguised that the restriction will press heavily on a variety of important industries. The hardship is the greater because British papermakers have come to the rescue of the country, and have laid down machinery and plant for the production of certain kinds and qualities of paper which, prior to the war, were not made in Britain at all. They were imports from foreign countries, particularly Germany, and, while the total exports from Great Britain of manufactured paper have declined since the war broke out, the home producers have been able to secure a great deal of what used to be German trade, and have been able to increase their exports to the Overseas Dominions and Colonies. "Thus," remarked a leading manufacturer, "while the Government promises a prospective and speculative boom to British industry, it is about to take away what is essential to the immediate development of that industry. Nothing but the pressing needs of the vigor-

ous prosecution of the war could justify such a course, and we can but assume that in the opinion of the powers that be this justification is complete and unanswerable."

The Board of Trade Advisory Sub-Committee appointed to consider a tariff on paper manufactures recommends an ad valorem import duty of 15 per cent on paper manufactures and an ad valorem duty of 33 1-3 per cent on printed matter.

The opinion among the paper trade in Great Britain seems to be that even in spite of the threatened restriction of output the Government would immediately act upon the recommendation of the Sub-Committee and put into effect such a tariff, the hesitation which many manufacturers feel in equipping factories for supplanting products that formerly came from Germany and Austria would largely disappear, and manufacturers would go "full steam ahead" in their schemes to capture the enemy's trade.

Extreme conditions demand unusual steps, and it is said that the opinion for prohibition and a high tariff wall is shared by many who have formerly called themselves Free Traders.

FORESTRY MEN FOR THE FRONT.

A Canadian Forestry battalion has been asked for by the War Office and steps have been taken immediately by Major-General Sir Sam Hughes to form it. It will be in command of Lieut.-Col. Alexander McDougall of Ottawa, the well known railway contractor. The majors of the battalion will probably be Gerald White, M.P. for North Renfrew, and B. R. Hepburn, M.P. for Prince Edward.

Canadian woodsmen are wanted at once in Great Britain for timbering operations in connection with war requirements. Lumber is now at an almost prohibitive price in the Mother land, and ocean rates on lumber from this side are so high as to practically stop export from here. In Great Britain there are still large resources of standing timber which can be cut down and utilized for building operations, trench construction work, etc. The men from Canada know the business and will get to work within a month or so on the job.

It is planned to raise companies of experienced woodsmen from British Columbia, from Alberta and Northern Saskatchewan, from the Ottawa Valley and from Quebec and New Brunswick. A number of prominent lumbermen and contractors have agreed to cooperate in the recruiting of the new battalion, and these modern *couteurs-de-bois* will form one of the most picturesque and at the same time most serviceable of the Canadian battalions for overseas service.

DEATH OF J. G. RIORDON.

John G. Riordon, vice-president of the Mail and Empire, and largely interested in the Riordon paper mills at Merritton and Hawkesbury, died a few days ago at his home, Queens Park, after an illness of two years. He was 51 years of age and unmarried.

UNITED STATES TRADE IN PAPER.

Canada's paper makers can profit from a study of the United States trade returns for 1915 in regard to pulp and paper. The neighboring Republic imported last year \$24,465,000 worth of paper and manufactures thereof, and exported \$22,242,000 worth. In 1914 the figures were respectively \$27,604,000 and \$20,113,000, while in 1913 they amounted to \$24,359,000 and \$21,174,000.

The importations of pulp of all kinds follows: Last year, \$59,801,000; 1914, \$63,174,000; 1913, \$60,647,000.

The unbleached pulp received for foreign manufacturers in 1915 amounted to 287,232 tons, valued at \$10,954,182. In 1914 the arrivals recorded were 294,884 tons, valued at \$11,180,232. The unbleached pulp received in 1913 totalled 264,513 tons, valued at \$9,676,380.

The market in which the American manufacturers of news print suffered their greatest loss was Australia, and the chief cause for the decline of this business was lack of shipping facilities. Australia imported 23,353 tons of American made news print valued at \$1,185,087 in 1914, and this business dropped last year to 7,186 tons, valued at \$349,244. While the U. S. trade with Canada and Chile also fell off, gains were made in Cuba, Mexico, Argentina and those markets hidden under the general heading of "Other Countries." The biggest gain was made in Argentine, to which country 19,921 tons of news print valued at \$968,829 were shipped during 1915, while the business of the preceding year amounted to only 11,148 tons, valued at \$556,267.

Canadian manufacturers surely can compete with our neighbors in the Argentine, Chile and Australia. These markets are worth going after.

THE FARMER'S WOODLOT.

Out of the 2,000,000 acres of farm woodlot in the United States, as estimated by the United States Forest Service, New York has more than two per cent. The farm woodlot in New York promises to be of increasing value not only to the owners, but to the wood-using industries of the State. In some regions most of the hardwood lumber that is used is coming from farm woodlots. The State College of Forestry, at Syracuse, is studying methods of better marketing of woodlots, and through its wood utilization service, in which it announces the needs of wood users and the offerings of wood producers, it has already brought about more profitable utilization of numerous woodlots in the State.

PAPER PLANTS AS MUNITION MAKERS.

Paper mills, as well as dyestuff factories, may become auxiliary munition factories in case the United States should go to war. This statement was made recently by General H. T. Scott, Chief of Staff, U.S.A., and Acting Secretary of War, in a letter to Congressman E. J. Mill, of Connecticut.

General Scott said that the American paper manufacturers' industry as well as the dye factories, could in six days be turned from their general business lines into munition makers.

These industries, he declared, are one of the greatest links in preparedness.

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proved, the mineral content was increased, and the water content diminished. Whereas rosin sizing diminishes the strength of paper, animal sizing increases it; the mineral content is increased, and the hygroscopicity diminished by both kinds of sizing, which are equally efficacious in retaining loading materials. The percentage loss in strength caused by loading is approximately 2.2 times the percentage (between 25 and 30 per cent) of loading material. — Paper Making.

Education That Makes for Industrial Efficiency

By WILFRED G. ASTLE.

(Specially Contributed)

The present era has been called the "Age" of so many different things that the term has lost its force. However, the tendency toward specialization has been more frequently used as a basis for this term, probably, than any of the other alleged tendencies of the times. Then, again, this has also been called the age of conservation—conservation of natural resources—minerals, water powers, forests, etc.—conservation, no less, of the resources of the citizens, the maintaining of all their faculties, both of mind and body, in a state of highest efficiency and constant readiness for service. Human faculties, thoroughly trained and properly conserved, are strengthened with every obstacle met and overcome.

The statement that this is an "Age of Specialization" has been due, no doubt, to one fact—that the more highly educated thinking and professional men have subconsciously attained the realization that the age-old custom of the labor classes, in regard to trades, is productive of better results than any effort that may be made by one man to master all, or even many subjects.

Specialization is not new, but is merely an economic disposition of information. The specialists do not include all, or even a considerable percentage of the so-called educated classes. The real specialists are the laborers, the skilled artisans, each of whom knows his trade, knows it well, and seeks no further information save that of current events, government, and other elements that bear directly and constantly upon his personal welfare.

Human Capital.

There are two kinds of capital in this world. The one is called property and consists of lands and machinery, of stocks and bonds, etc. This kind of capital is being abundantly developed. The other kind is human capital—the character, brains and muscle of the people. This capital is not being properly developed, and the question of its complete and efficient development has been overlooked. Yet its value in every efficient nation, is five times in money the total value of all other resources combined. In developing the physical resources of the country, the little thing has been done, relatively; it remains now to do the infinitely greater thing, and it remains to the teachers of tomorrow to be of such kind and ability as will be the great creative and administrative force in the doing of this supremely wonderful thing.

Alteration of the Industrial Situation.

This country has prospered marvellously, and prosperity has been accepted as proof of the efficiency of its methods and institutions. A new relationship between our methods on the one hand and the fat bank accounts on the other, has lately sprung into existence, and we are just becoming to realize that we have been capitalizing the brains and human efficiencies of the nation less than we thought, and the material resources more. We have been particularly proud of our agricultural exports, but scientists now tell us that every bushel of wheat exported carries with it twenty-seven cents' worth of phosphorus; every bushel of corn

fifteen cents. These are about the estimated profits on the shipment. We have, therefore, been capitalizing our soil fertility and diminishing the asset side of the national account by almost as much as we have been increasing the money values on the other side of the account. Our exports have been almost entirely of crude and semi-crude material—the product of mine, forest and farm—with only enough of labor in them to make them fit for ship's cargo. We have gone about as far as we can in exporting crude materials to be made into finished products by the better educated laborers of competing countries. For an example, the United States has been exporting cotton at fourteen cents a pound, with scarcely any labor in it; then buying it back from the thrifty Swiss, in the form of fine handkerchiefs, at forty dollars a pound, all labor.

Is this not a lesson for us? In place of this we should have a thorough going system of industrial education, which should be intensely practical and reach every child, if necessary, upon compulsion. Common school education in all countries rests upon the principle that it is the duty of the State to educate every child. The prosperity, and possibly the very existence, of the country depends upon the intelligence, character and efficiency of its citizenship. The duty of the State in this direction is as great toward the least efficient of its children, within their abilities, as toward the brightest and most hopeful.

The Value of Man.

The value of man, not the value of a few, nor of a majority, but the value to himself and to the country of the last man and the last woman in the community, is the theme of the ages. With this idea comes that other of the duty and the opportunity of the State to make of this last man and woman all that it can, as an asset of the country, and when he wills, a controlling factor in the country.

Mr. J. M. Dodge, of Philadelphia, in a noteworthy paper, entitled "The Money Value of Technical Training," has computed the capital value of four classes of employees, each according to the amount of preliminary instruction which they have received. The first group he calls the unskilled labor group, the second the shop trained or apprentice group, the third the group trained in trade schools, and the fourth, the group educated in the higher technical schools. The unskilled laborer, with but primitive training, works under the immediate supervision of a boss and earns at the age of twenty-two \$10.20 per week. This amount represents \$530.40 a year, or capitalized at five per cent, \$10,608. This sum, then, \$10,608, is the capital value of the unskilled laborer; in other words, it represents the amount which he is worth to himself, and also to the community.

The apprentice starts in at three dollars per week, and is worth about \$3,000 at the outset. At the age of twenty he is earning \$9.00 per week, and his worth amounts to \$9,000. From the age of twenty to twenty-one and a half his pay is increased to \$13.20, and his potential value to \$13,200. At the age of twenty-four

he earns \$15.80 per week, and his value is \$15,800. In other words, in eight years, the capital value of the shop trained apprentice has increased \$12,800.

The third group is composed of those young men who enter a trade school at sixteen years of age, and devote the next three years to acquiring a trade under competent instruction. At the age of nineteen, a trade school man enters the machine shop, and he can command \$12.00 per week, equal to the apprentice at twenty-one years of age. The three years at school have increased his value from \$3,000 to \$12,000, a gain of \$9,000; thus he has caught up to the apprentice entering the shop at sixteen and who has been working for five years. Continuing the comparison, at the age of twenty-four the trade school graduate is earning \$20.00 per week, with a potential value of \$20,000, or \$4,200 greater than that of the shop trained man. He increases his earnings up to \$22.00 per week, a potential value of \$22,000, and he does not, as a rule, go much further. The members of the third group are worth, therefore, on the average \$6,200 more to themselves than the members of the apprentice group, solely as a result of their more thorough preliminary training.

The fourth group is represented by a boy of sixteen who studies in a high school until his eighteenth year, preparing for admission to some technical institution. Here, after four years of training, he is graduated at the age of twenty-two, ready to begin practical work. His wages at starting are \$13.00 per week, or the same amount earned by the apprentice at the age of twenty-one and a half, and by the trade school group at nineteen and a half. He has apparently lost by his six years of preparatory study, being six months behind the apprentice, and two and a half years behind the trade school graduate. The graduate of the technical school, however, increases his earnings rapidly. Within six months his wages rise to \$14.00 per week, and he reaches \$15.80 per week nearly one year before the regular apprentice. In three years' time, the technical graduate earns \$22.00 per week, surpassing the members of the trade school group, and his earnings continue to increase until at the age of thirty-two, ten years after entering upon his practical work, the technical school graduate earns \$43.00 per week, and his potential value is \$43,000. Six years of preparation have enabled him to far outstrip the shop group and the trade school group.

Looking Ahead.

There are particular reasons why intelligent training in the mechanical arts is imperative for the country to-day. The demands of efficiency and economy have subdivided and specialized the great industries to an extent never dreamed of a few decades ago. At the same time, the old apprenticeship system has virtually disappeared. In some trades it has been entirely abolished.

One of the biggest problems which confronts business people to-day is the cultivation of the habit of looking ahead in order to be prepared for what the future may bring. There are two great classes of individuals; those who are thinking and planning for tomorrow, and those who are waiting to have their thinking done for them. Education, therefore, must be considered not from the standpoint of to-day, but from the standpoint of the future effects. It should not be considered that in educating and training the young people, that it is being done for the benefit of the present only, but for the sake of the training itself, for

the sake of the generations to come that the educational standards may be raised.

The Value of Daily Toil.

After generations of more or less riotous and careless thinking, we are beginning to return to the primal conception of the dignity and of the infinite educational value of labor; of the precious, ordinary, everyday's hard work, which, after all, has made us what we are.

Carlyle says: "The latest gospel in the world is, 'Know thy work and do it.' All true work is sacred. In all true work, be it true hard labor, there is something divine." A noted educator, measuring the educational value of the school of hard knocks and the day's work, made an informal census of all the men who are to-day responsible for the greatness of one of the foremost cities in the United States, for its present activities, character and prosperity. He found that substantially all of them left school at about twelve years of age, each reaching his place among those who were greater than the school-bred men by force of that education that comes of the day's work. Of course, these men were by nature of the stronger sort, and it may be said that they came to the top in spite of obstacles. And so some, in the cloistered aloofness of the present-day school, and ill adapted thereto, will succeed in the world of real things, in spite of the defects in the present system. It is the purpose of the new system in industrial education to unite in one these two schools, that the lessons of the day's work for wages and the lessons of the printed pages shall be learned conjointly by the fifty per cent who now leave school before receiving, what is now considered, a proper education.

The Human Waste Educationally.

The new idea of industrial education takes thought, not of what the schools do, but of what they fail to do. It is not unappreciative. It may be over-appreciative—over-appreciative of things undone. It is not satisfied with the number of children who are put through the schools and rounded out in the process. With new eyes, it sees the waste and wreckage of the schools—a percentage of waste and wreckage inconceivable, and unapproached in any other line of human activity.

The modern educational system lays down a course, which covers almost every subject in the encyclopedia, and requires every child to cover all of it. Most of it is memory work. It proceeds upon the false hypothesis that all children are as the imaginary average. But they are not. The tendency of the child is not consulted and nature is ignored. The school that ought to specialize insists upon generalization. Generalization ruins the born specialist, and ninety per cent of men are born specialists.

Information is a very important thing, in fact, it is the fundamental element of action, of thought itself. Some fact, of which the individual is informed, is the basis of every thought and act. This information is stored in memory, and it may be of value, yet again it may be dangerous. It is possible for the memory to be overstocked, and it is also possible that the individual may be so flooded with impulses from a wide variety of information that he may never select the one important impulse and concentrate his energies upon one line of profit. Besides it the great variety of information, most of it is useless, and the acquirement and retention of it is a colossal waste of energy, because a fact once known, no individual will will-

ingly release it. For instance, when I was in school, I was compelled to memorize long dynasties of rulers. Why? What need had I of them? To-day, if I wish to know who ruled Egypt in 800 B.C., or who was King of England in 1392, I can turn in a moment to an encyclopedia and find out. To save a single minute's time once or twice in a lifetime, should I spend hours, yes, days, memorizing whole dynasties? It seems absurd. It is vastly more important to know where to find a fact recorded than it is to memorize the fact unless that fact be a part of each day's work or routine.

Adolescence.

Not only is an infinite mistake committed in the failure to educate, in any case, more than half the population, but another mistake lies in the loss, except under the criminal laws, of all control and direction by the State of its youth in the period of adolescence, say from 14 to 17 years. This is the critical time of life, when the will asserts itself, the impulses of maturity are felt, and when, as is recognized by all countries educationally more alert, the developing character needs guidance and cries out for it; for the establishment of standards, for interpretation, and for the strengthening and developing of judgment.

Efficiency.

Efficiency is the result of doing a thing right the first time. It is the greater measure of accomplishment with the least expenditure of energy, and this can only result from correct knowledge upon the subject in hand. Granted then, that the average boy or young man has health, some ambition, some desire, has selected the work which he likes to do, his degree of success will be determined more by the knowledge acquired and used, and the intellectual development which comes through acquiring knowledge, than by any other single factor, and all knowledge should be available to all who are willing to work for the ultimate and greater reward. Efficiency is the best test of education, and by this test our common school education doesn't educate. The inefficiency of the common school graduates in their striking characteristic and the one first observed.

Love of work is born of efficiency in work. Joy in work is a joy past describing. It is the inherent right of every child that the State secure that joy to him forever by teaching him to work with maximum efficiency in a chosen occupation. Not until recent years has the public conception of the school's duty included that of making efficiency in his occupation, and therefore intelligently happy, every worker, by industrial education.

Education a Dominant Factor in Success.

One will do best that which one likes best to do; but having found, through experimentation, through study, observation and other avenues of determining our natural likes and dislikes, the trade or profession which appeals to us the strongest, we are still unable to proceed to the best advantage unless we possess knowledge of the work which we attempt. Merely liking to do a thing does not insure that the task will be well done. It is here that the average boy or girl fails, and often with a few attempts with indifferent results confidence disappears and conviction, founded on the results of the ill-advised efforts, determines the future of the individual along mediocre or common lines.

If you have not sufficient education there can only be one result unless such education is acquired. It is

impossible to work with broken, dull, poorly devised tools, and expect to get the same results as can be accomplished with sharp, modern tools adapted to the task in hand, and it is equally true that the untrained and undeveloped mind, even though the ambition be great, cannot possibly attain the same results as the trained, developed intellect.

Corporation Schools.

The corporation school in its nature necessarily must be a continuation school, beginning its work where the public school leaves off. From a thoroughly utilitarian standpoint, a man or woman can never become a truly efficient working machine unless he is trained to deal intelligently with his task. Thus, and not through speeding up, can a business hope to get the most out of its men and women at the same time benefiting them as well as the organization of which they are parts. The corporation school is the most effective way of making employes more valuable to themselves and to industry. It may be argued that up to the present time workers have got along pretty well without being specially trained to direct their intelligence. This may have been true of a few generations ago when conditions of labor in this country were different, because the age of specialization had not yet arrived, and one person did the whole of a piece of work.

But to-day the factories, stores and offices are filled with specialized workers who perform, not complete tasks, but their allotted portions of them, with the result that they are not familiar with the beginning, middle and end of transactions. If they make mistakes, very often they do not see the outcome of their errors, therefore it is very necessary that the modern employe get instruction which shall supply missing links in his industrial knowledge and develop that sturdy grasp of whole processes which his predecessor, the independent artisan or small merchant, might acquire through experience.

Corporation school training possesses peculiar advantages in that it takes into account a man's or woman's occupation and gives instructions most pertinent to it, it also aims to see that a student is equipped with knowledge of how to do his work effectively, health to "bank" on, and temperament in character suited to his calling. If this last is impossible, effort is made to place him in an occupation to which his inherent traits fit him. These three, the psychological, physical and intellectual sides of commercial education, embrace so much that they can scarcely result in grinding pupils out mechanically.

Trade Schools.

The need of trade schools is as great as we have ever believed. The trade school is, however, the apex (the "little end") of the pyramid of industrial education, resting properly, as a condition precedent, upon the education of industrial workers generally in continuation schools. Its province is to receive the most promising from the great body of moderately instructed pupils in the continuation schools and to train them for the higher places in industry, to advance them towards position of real leadership.

Citizenship.

It is not enough to make children competent industrial workers. They must also be made worthy members of society. They must be taught their rights and their obligations, to themselves, their companions and their country. Courses in "Citizenship" so-called, are a very important part of industrial training in Continental Europe, and should be. Children are

taught to understand and appreciate the ordered processes of the law.

Allied to citizenship should be courses in hygiene, the structure of the body, its nourishment, care, and cleanliness; deportment, conduct at home, and in society, towards teacher and helper; sanitation; social legislation; trade and commerce, and their relation to the well-being of the workers and of the society.

Industrial Education in General.

Industrial education may be said to be particularly for the industries and for those who work therein. It is difficult, however, in view of a broad survey of the subject, to write in the interest of a particular class. A manufacturer is, after all, only a middleman. He takes such material and labor as come to hand; does with them the best he can and from the product gets his toll and his profit; otherwise he ceases to manufacture. Manufacturers, then, can get on with any

sort of labor and material, after a fashion. They do want industrial education, however, to meet the special needs of their occupation.

To the working man industrial education means everything that is best in life—an increase in income, in happiness, in strength of character and understanding, in self-expression, in all that comes of increased knowledge and efficiency.

Let no one think that this subject begins and ends with the schools or is an attack upon the schools. Like workmen's compensation for accidents, it is part of a greater movement, of a marvellous programme, in some respects known, in others only felt, that is now upon us, and that will yet advance us, as a people, immeasurably.

This question of industrial education is not merely one of philosophy, or of speculation, but it is a project under rapid headway, with an ever accumulating body of new experiences and information.



CANADIAN FORESTRY ASSOCIATION

Father Bull: "We'll have to stop every financial leak if we want to win this war."

Jack Canuck: "Leave it to me. I'll put another million acres under wheat."

Father Bull: "That is mere patchwork, my boy. Why not stop your forests from burning down? These

acres of splendid timber at your door represent the easiest money you can ever lay your hands on."

Newspaper Note: "The Canadian Forestry Association makes the statement that if Canada would take the simple measures to stop the plague of forest fires, the timber saved would pay the annual interest on the last Dominion loan of \$100,000,000."

STATISTICS OF THE PULPWOOD INDUSTRY

Interesting Particulars Supplied in a United States Government Report on By-Products of Wood.

The United States Bureau of Foreign and Domestic Commerce has completed a preliminary investigation and a report on "by-products of the lumber industry," and from advance proofs furnished, the representative of "Paper" presents extracts in connection with the manufacture of woodpulp, both mechanical and chemical, production costs and yield, and foreign trade in woodpulp. The investigation was conducted and the report prepared by H. K. Benson, commercial agent of the department.

The scope of the investigation included a survey of the industries engaged in the distillation of wood, the manufacture of tanning extract, woodpulp, ethyl alcohol, producer gas and several minor products.

It is stated that the annual consumption of woodpulp in the United States exceeds 3,000,000 tons, of which one-fifth is imported.

The woodpulp industry produces annually an output valued at over \$80,000,000. Considerable interest is manifested by the manufacturers of sulphite pulp in the possible utilization of the sulphite waste liquor for the recovery of sulphur or other profitable utilization. This would result in a lowering of the cost of production of sulphite pulp. The manufacture of kraft pulp is also becoming well established, and is bringing about the utilization of the cheaper wood.

The report states that the annual production of lumber in the United States is estimated to exceed 4,000,000,000 cubic feet, but the quantity of wood taken from the forest by the various wood-utilization industries is, however, much greater.

In 1907 23,000,000,000 cubic feet of wood were removed from American forests for use in the manufacture of various products. While much of this wood was utilized in the production of primary products such as lumber, shingles, lath, firewood, poles, posts, rails, crossties, cooperage stock and mine timbers, relatively small quantities were required for the manufacture by chemical or other means of by-products such as pulp, naval stores and tanning extracts. Comparison of the quantity of wood taken from the forest for lumber and the quantity of lumber actually produced also shows that much wood is wasted.

The original forest mantle consisted of 850,000,000 acres, of which 550,000,000 acres, comprising about one-fourth of the United States, still remain. From this area may be cut over 235,000,000,000 cubic feet of lumber, of which four-fifths are privately owned.

It is obvious, the report says, that wood-using industries will continue for some years as an important financial asset of this country. It is evident also that by the introduction of methods of closer utilization the life of the forests may be greatly conserved and extended.

In order to ascertain the progress made by the European countries in close utilization of their forests, and especially of their by-products, it was planned to conduct an investigation abroad. This was rendered impracticable on account of the war in Europe. A brief survey of conditions in the United States was thereupon undertaken.

In connection with the available supply of wood for by-products, the report says:

Three sources of supply are available for use in the manufacture of wood by-products: (1) Forest growth that is non-merchantable for lumber purposes, (2) logging waste, and (3) sawmill waste.

No accurate detailed information is at hand regarding the proportion of the existing forests of the United States that is non-merchantable for lumber purposes. Investigations conducted by the Forest Service have led to the statement that "only 25 per cent of our present producing forest is saw timber." Inasmuch as the standing saw timber in the United States is estimated at 2,800 billion feet (board), or 235.5 billion cubic feet, a conservative estimate of the quantity of timber not suitable for lumber would place it at two to three times the estimated saw timber, hence varying from 500 to 700 billion cubic feet of wood. Emphasis, however, must be laid upon the fact that such figures are mere guesses and serve only to indicate the immensity of the supply.

The waste of timber in logging, while extremely variable, can be estimated perhaps more definitely. Waste in stumpage occurs by cutting the tree too high and leaving the stumps to rot. Young trees are frequently not protected from falling timber. Immature and defective trees are cut and rejected. Large limbs, tree tops, and lodged trees are left to waste. Small bodies of timber in comparatively inaccessible places are often left standing. Trees broken in falling are generally left, as are also short log lengths. In the national forests, where modern methods of scientific forestry are practised, this loss is about 10 per cent, but in general practice 15 to 20 per cent is not too high an estimate in considering the logging industry as a whole. On this basis the annual logging waste of the United States exceeds 1,500,000,000 cubic feet of wood. A portion of this is ultimately recovered and utilized for primary products other than lumber, but by far the larger portion is subject to destruction by decay, fire, and land-clearing operations.

The annual quantity of sawmill waste in the United States may be roughly stated at about 4,000,000,000 cubic feet of wood. It should be clear that this waste is not an absolute loss. A part of the slabs and edgings are used for making lath, and many mills use them for fuel. Slabs and edgings are also, to a limited extent, used where small dimension stock is required, as in the making of clothespins, toothpicks, excelsior, and other products of primary utilization. Sawdust is utilized in various ways. Small quantities are used for packing material, non-conductors, and in plastics. It also constitutes a fuel in the mills, but a large portion goes to the waste burners or accumulates in heaps at the mills. The bark of the hemlock, chestnut, and oak commands a sale as a tanning material, but the bark of other species is considered valueless and is left in the wood or sent to the waste burner.

The relation of the trees in the forest to the lumber derived from it may be expressed in the statement that an average of only 320 feet of lumber is used for

each 1,000 feet that stood in the forest. The possibilities of this shrinkage are aptly expressed in the following quotation:

"If all the wood wasted in the manufacture of yellow-pine lumber in 1907 had been steam distilled for the production of wood turpentine it would have yielded more than the total production of gum turpentine in that year. If all the wood wasted in the manufacture of lumber from spruce, hemlock, poplar and cottonwood in 1907 had been used for paper making it would have furnished all the paper made from wood in that year. If all the wood which went to waste in the manufacture of beech, birch, and maple lumber in 1907 was nearly equal to the quantity of these woods cut for distillation. The waste in the manufacture of oak lumber was twice the quantity of all hardwoods used for distillation."

Concerning woodpulp, the report says:

Manufacture of Woodpulp.

The manufacture of woodpulp in a well established industry in the United States. The number of establishments engaged in the paper and pulp industry as reported by the Thirteenth United States Census is 787. In 1911 the quantity of wood of the various species utilized for pulp manufacture was as follows:

Spruce:		Cords.
		Mechanical process.
Kinds		
Domestic	822,743	
Imported	298,960	
Hemlock	32,162	
Poplar:		
Domestic	9,040	
Imported	3,718	
Balsam fir	89,485	
Pine	28,306	
Beech		
Maple		
Cottonwood	3,995	
White fir	12,915	
All other kinds of wood	355	
Slab wood and mill waste	12,462	
Total	1,314,141	

United States, comprising at least 70 per cent of the total wood used for pulp production. Poplar ranks third in importance. In some mills balsam fir ranks high. Recently several mills have begun operation on long leaf pine and shortleaf pine, and one mill uses Douglas fir only. Other kinds of woods used are chestnut gum, tamarack, basswood, elm, birch, ash, walnut, cucumber and cherry.

The preparation of the wood varies with local conditions. Frequently it is bought by the cord as round wood 4 feet in length and of varying diameter. The wood when bought in this manner generally has been peeled in the woods; or, if it still remains the bark, it must be removed. This is done by a rotary barker which consists of a heavy iron disk inclosed in a strong casing. The disk is provided with a number of knives projecting from the surface. As the disk revolves it completely removes the bark from the small pieces of wood pressed against its surface. This process of bark removal, or "rossing", also removes a portion of the wood (from 10 to 20 per cent). To lessen this loss, rotary drums made of angle irons and revolving in a tank of water are in use in some plants. The wood continuously enters the drum at one end and is discharged clean at the other end.

In many cases pulpwood is bought in the form of

Sulphite process.	Soda process.	Sulphate process.	Total
Cords.	Cords.	Cords.	Cords.
786,632	1,331	1,649	1,612,355
604,415	.....	.....	903,375
563,535	4,803	16,163	616,663
4,101	320,763	25	333,929
.....	30,577	.....	34,295
100,339	.....	1,955	191,779
4,286	86,135	5,292	124,019
.....	44,320	.....	44,320
.....	36,979	.....	36,979
32,498	.....	.....	36,493
67	12,061	.....	25,043
763	84,310	2,840	88,268
245,914	21,401	757	280,543
2,342,550	642,680	28,681	4,328,052

The number of mills engaged in the manufacture of paper has steadily increased from 787 mills in 1909 to 826 in 1914. The pulp for the paper mills is produced in 288 establishments, some of which are operated in connection with paper mills, while others are the producers of pulp alone. In this investigation attention was directed mainly to those processes that utilized so called inferior woods or lumber wastes. A discussion of the prevailing processes will, however, be necessary to understand the requirements for the closer utilization of wood for pulp manufacture. The data for this discussion were obtained from the literature on the subject, from visits to mills in New York State, and in the Southern States, and in Oregon, and from personal conferences with manufacturers. It is, however, not intended as a comprehensive report on pulp manufacture, the investigation aiming merely to be a general survey.

Raw Material and Finished Products.

Spruce and hemlock are the chief pulpwoods of the

logs, which are cut by a drag saw into lengths of two feet, rossed, the bolts split, and conveyed in the grinding room.

Woodpulp is classified as mechanical pulp and chemical pulp, the latter in turn consisting of sulphite, soda, and sulphate pulp. The latter is also often called kraft pulp, since it enters largely into the manufacture of kraft paper. In the foregoing table it may be noted that 54.1 per cent of the total wood used is reduced to pulp by the sulphite process, 30.3 per cent by the mechanical process, 14.9 per cent by the soda process, and less than 1 per cent by the sulphate process. At the present time, however, the annual production of sulphate pulp greatly exceeds the quantity reported in 1911.

Mechanical Pulp.

The mechanical process isolates the component fibers of wood by mechanical abrasion. The wood is first prepared as described in the foregoing paragraph, and is then conveyed to the grinding room for reduction to pulp. Grindstone made of gritty sandstone, fre-

quently imported from England, are used. They are mounted horizontally on a heavy vertical shaft and incased in a strong castiron circular box. The stones are usually 54 inches in diameter, with a "face" of 27 inches. Around the circumference of the casing are openings, ore pockets, into which are two-foot lengths of wood are placed and pressed against the rotating stone by hydraulic pressure.

Where water turbines constitute the power for grinding, the stones are mounted vertically on a horizontal shaft. Three or four pockets 24 inches long and 12 inches wide receive the wood, which is placed with the grain parallel to the width of the stone. This causes the fiber to be torn away by attrition perpendicular to the longitudinal direction of the grain. A pressure of 25 to 32 pounds of the square inch is applied to the wood and the stone rotated at a speed of 220 to 230 revolutions per minute, which requires from 300 to 500 horsepower per stone.

During the grinding water under pressure is added to the surface of the stone. A large excess produces "coldground" pulp, while with a minimum quantity of water "hotground" pulp is obtained. The former is a fine even pulp, while the latter is coarser and contains longer fibers.

The pulp is carried away from the stone, passes over an inclined grating, and after dilution with water passes on to a flat screen with openings two-fifths of an inch in diameter into centrifugal screens with 0.085-inch mesh, and finally to flat vibrating screens with 0.012-inch mesh.

After thus removing the coarse particles the fine pulp passed to the wet machines, where a large portion of the water is removed. The pulp flows continuously into a large vat in which rotates a hollow drum with a fine wiregauze surface. The pulp adheres to the drum, while the water passes through the gauze and is drained away. The thin sheet of pulp is next picked up by a felt and is passed between rollers which press out more water. Finally the pulp is wound on a large wooden cylinder until it forms a thick sheet. It is removed at intervals, folded into laps of convenient size and stacked, or it may be submitted to pressure for the removal of more water and shipped in the form of bales. In this condition it contains 50 percent air-dry pulp and 50 percent water. By air-dry pulp is generally meant pulp containing 10 percent moisture, an assumption based on the amount of water that absolutely dry pulp will absorb from the atmosphere.

BRITISH IMPORTS OF PAPER MAKING MATERIAL.

The tonnage of raw material for paper-making imported during the past three years is as follows:

	1913.	1914.	1915.
	Tons.	Tons.	Tons.
Esparto and other vegetable fibres	204,957	183,144	137,538
Chemical wood pulp	411,803	433,239	402,841
Mechanical wood pulp . . .	565,954	557,033	551,269
Strawboard	176,521	160,456	191,130
Millboard and wood pulp board	65,953	63,783	60,649

Certainly this represents a fairly big fleet of ships, but as it has been said, one question is how many are neutral bottoms? The original intention was to reduce the importation by 60 per cent, but more than this arrives in neutral ships at present.

MR. J. G. RIORDON.

Mr. John George Riordon, who passed away at his home in Queen's Park last week in the 51st year of his age, was a man so well worth knowing that it is to be regretted more had not an opportunity of knowing him. Though few mingled less in society, few were more companionable. He had a bright humor, a genial manner, and a most kindly heart. Well read and conversant with current events, his analytical habit of mind, combined with his turn for drollery, made the daily chat with him a real pleasure to his familiars. Had the late Mr. Riordon not shunned publicity as much as most people court it, he would have been a prominent figure in his day. His way of life was that rather of the studious man of leisure than of the man of affairs. At the same time, he had an excellent capacity for business, and his judgment was highly valued by those commercially associated with him. His views on public questions were those of a progressive-minded citizen. His large sympathies, indeed, inclined him to what are called advanced views. Those who came in close contact with him at the time will remember how the Roosevelt phrase of the "square deal" appealed to him, and how he would be diverted over the expression "honest graft," wafted about the same time from the other side of the border. He had a philosophical way of looking at all things, but, if we may so word it, his philosophy was that of the philanthropist. His heart was with the man working against odds. He had what that might be called a gift for extracting the essence of statistics. Out of tables of figures, howsoever bewildering and complicated, he would make his way to general conclusions that usually proved to be the pith of the matter. Mr. Riordon, who was the last of the family of the late John Riordon, of St. Catharines, retained a large interest in the Riordon Paper Mills there and at Hawkesbury, and also in the Mail Printing Company, of which he was vice-president.—Mail & Empire.

LAURETIDE LIMITED TO EXPAND.

On the local "Street" it is generally believed that Laurentide Limited has completed all arrangements for the doubling of its paper plant at Grand Mere. A meeting of the directors was held in Montreal this week at which it is said final arrangements for the enlargement had been completed.

It will be remembered that some months ago the Laurentide Company segregated its power interests from the paper end of the company, and this was naturally looked upon as a step for the further utilization of the company's immense power possibilities. It was pointed out at the time that the Power Company bonds received in that deal, and now held in the treasury of the company, could be sold at any time, realizing a sum sufficient to pay for doubling the paper plant. That is the capacity could be increased 100 per cent without any addition to the company's capital liabilities. In turn the power subsidiary would benefit by an increased demand for power for the mills as approximately 40,000 h.p. would then be required against 25,000 at present.

PREPARING TO GO OVERSEAS.

Mr. J. H. A. Acer, sales manager and a director of Laurentide Limited, has gone to Halifax to take the officers course for overseas service.

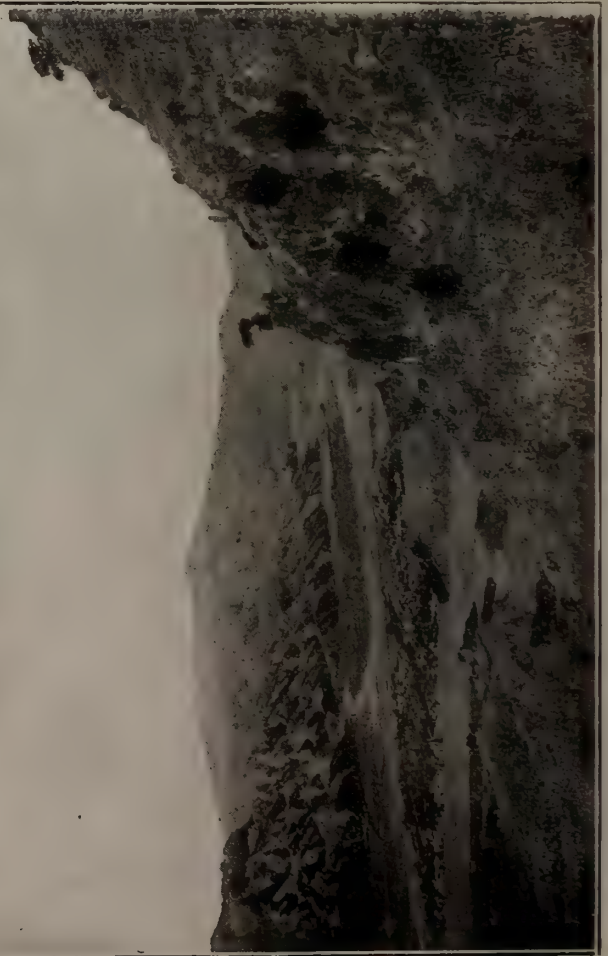
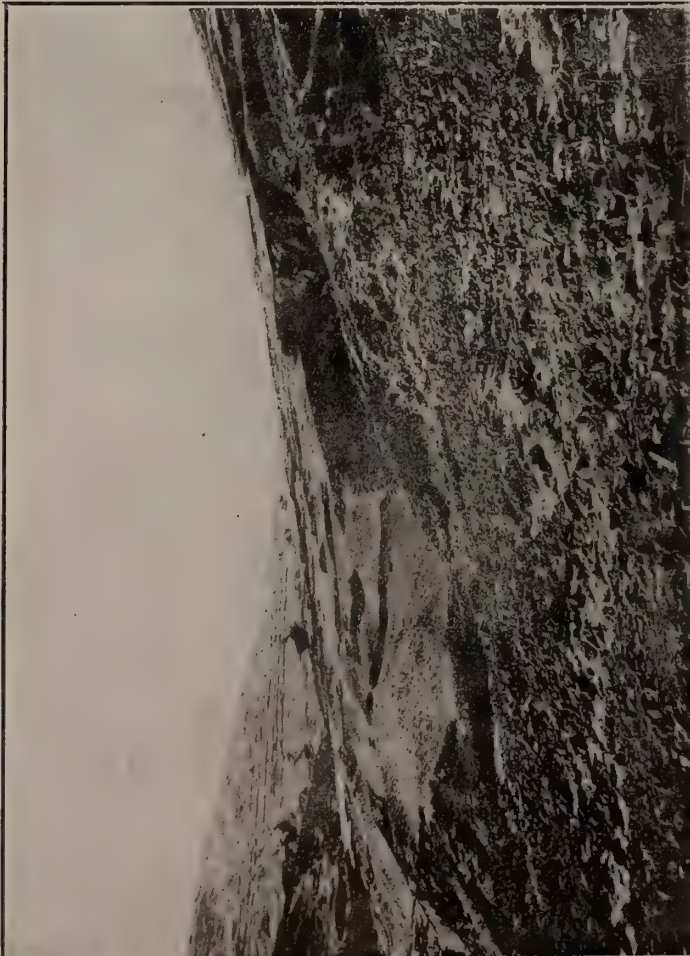


Waste lands in Norfolk County, Ontario, being reclaimed by the Ontario Government.



A Forest Survey party on Wapiti River, Saskatchewan.

What happens when hillsides are denuded of forests. These two pictures were taken in Northwestern China, where hundreds of miles of once beautiful, wooded territory, well populated, and prosperous, have been turned into uninhabited deserts by indiscriminate removal of trees from the hills. Parts of Canada are headed in the same direction, and only the utmost vigilance will save us from large desert areas in hilly regions where forest fires and bad lumbering have already worked havoc.



Review of Canadian Paper Trade

(Continued from last issue).

Ontario Paper Co.

We expect to build a sulphite mill here in the early spring, with two 15 feet x 49 feet digesters, capacity of 50 tons per 24 hours. The buildings will be all concrete, steel and brick construction. As far as the paper mill is concerned, we do not expect to make any additions this year.

Contracts for digester have been let to the Chicago Bridge and Iron Works, who will build them at their Bridgeburg, Ontario, plant.

Foley-Rieger Pulp & Paper Co.

We have had a very satisfactory year in the ground wood line, considering the general condition. If the Powers that be will not unload another big plant like the Abitibi, for a few years, we may get our breath.

We have been catering to the book and writing mills with a bleached ground wood, for which process we have patents in Canada and the United States, and have worked up a nice trade, and the prospects are good for the future in this commodity.

The Ontario Paper Co. are preparing plans for a 30 ton sulphite plant for immediate construction.

There is a possibility of the Inland Pulp & Paper Company, for some time shut down, to be taken over by a party representing Mr. Hastings, of the American Writing Paper Company.

There are several other extensions being prepared here that will eventuate soon.

Fort Frances Pulp & Paper Co.

The Ontario & Minnesota Power Company, Limited, have not made any additions to the newsprint mill or the ground wood plant at Fort Frances, Ont., during the year 1915.

Our production was increased during 1915 on account of the fact that the organization in the mill was perfected and became more efficient, and the machines were speeded up to full capacity. As you know it takes several months for a new mill to get down to perfect running condition. We will not put any new lines of paper on the market, but continue making a very high grade of newsprint paper.

No definite decision has been reached relative to any extension or enlargement of the Fort Frances plant for the present.

We are looking for better business during 1916 than we enjoyed during 1915, and there certainly is room for improvement. The present price is somewhat higher than the price in effect during the first part of the year 1915, but even at the present prices there is a very small margin of profit in the business, and we hope that the market will advance so that the paper manufacturers may obtain a reasonable profit on their investment.

Donnacona Paper Co.

As far as we are concerned at our plant, we have not made any additions or extensions to our plant during the year 1915. We are contemplating putting in

a second Fourdrinier Machine, but we have not come to any definite decision in this matter.

We manufacture our own sulphite and also some sulphite for the market, and we also manufacture the ground wood we require for our own use, as well as making some surplus ground wood.

The water conditions for the early winter with us are about 50 per cent of normal.

Our operations during the past year have been 100 per cent of capacity, and we have every reason to believe that we will be able to operate our plant during the present year on the same basis. Every indication points for firmer prices in newsprint during this year. However, we anticipate very little advance for the reason, even at the present heavy consumption, there is still more newspaper manufactured than is consumed, and, on account of this over-production, very little higher prices will reign.

Gummed Papers, Ltd.

We wish to say that in the last year we have installed several new machines, among them a Paster and a 48in. Clark Sheet Cutter, and have increased the capacity of our plant about 50 per cent. Will say that we have also added to our list of products Cloth-lined Paper and Waterproof Papers, also Printed Paper Tape and Cloth Tape. The outlook for business is very encouraging, and our output during the last year more than trebled that of 1914.

No More Exportation of Power.

A meeting of the Hydro-Electric Radial Association was held in Toronto recently, at which resolutions were passed, asking that the Ontario Government restrict exportation of power to the United States, restrict the expansion of private electric companies, obtain government consent to the guarantee of bonds for immediate expansion of Hydro, and urge the early statement of the government's policy. These resolutions will be presented to the Ontario Legislature at the forthcoming session.

WALL PAPER MANUFACTURER ASSIGNS.

Shortage of aniline dyes, due to war forced Frederick Beck & Co., wall paper manufacturers of New York to file petition in bankruptcy giving liabilities of \$632,607 and assets of \$305,702.

A PULP MILL AND SAW MILL IN LAKE ST. JOHN REGION.

A saw mill and pulp mill are to be erected in the neighborhood of Lake St. John, Que., by the International Land and Lumber Company, Ltd., which owns an area of 300 square miles of spruce limits of the finest quality in that region.

COURSE IN CHEMICAL ENGINEERING.

The University of Michigan has established a course in Chemical Engineering, with special reference to graduate fellowship. The fellowship is open to graduates of any university.

Paper Problems in the United States

The United States Government is fully alive to the excited condition of the pulp trade. A few days ago Secretary Redfield of the Department of Commerce held a conference with members of his department, the Department of Agriculture and the paper industry for the purpose of devising ways and means of remedying existing difficulties. The question of dye-stuffs, clays, and bleaching powders came up for consideration, as well as the problem of transportation.

As a result of the conference, it was determined that the forest products laboratory should look for additional woods which could be used in the dyes needed in paper manufacture and that the Bureau of Standards would make a study of clays to ascertain if there was a substitute for the English clays used in coating paper and as a filler. There will be further conferences in the near future, it was said.

The Department of Commerce will shortly issue a public notice suggesting that people save their rags and old paper to be collected and sold as paper stock.

"The suggestion has been made in a letter to the department by a large paper maker that public notice should be given by the Department to save their rags and old papers, because if this was done on a considerable scale it would make good the shortage now existing in paper stock of this character," says Secretary Redfield.

"The Department will as a result formally suggest that it is a good, practicable point, made by an experienced paper maker, and it may be the means whereby the people of the country can contribute very materially toward saving one of their great industries from very serious loss and injury."

The Department will issue a press notice on the subject and endeavor to secure for it as wide publicity as possible.

The opinion is expressed that the Department issuing a suggestion of this character may result in thousands of thrifty housewives saving rags and old papers destroyed in small quantities in the household, but which in the aggregate would amount to thousands of tons, and thus contributing materially toward paper stock in this country. For instance it is noted that there was an enormous decrease in the importations of paper stock in the calendar year 1915, as compared with 1913, the figures being: Rags, other than woollen, used as paper stock, 79,532,801 pounds valued at \$1,317,597, as against 145,897,374 in 1914; all other paper stock, including grasses, fibres, waste, etc., used chiefly for paper making, valued at \$2,767,348 as compared with \$5,244,999 in 1914, or a total of only \$4,084,945 in 1915, as against \$7,352,309 in 1914.

The value of exports of paper stock, rags, and other, in 1915 amounted to \$357,953, as against \$550,579 in 1914.

Some of the reasons why paper is costing more these days than it did before the war in Europe resulted in a shortage of chemicals in this country are set forth in a compilation prepared by the R. P. Andrews Paper Co. of Washington, D. C.

It shows the prices for chemicals and other materials entering into the manufacture of paper which prevailed before the war and which are prevailing at present. For instance, the price of aniline colors before the war averaged about 20 cents a pound; now they cost \$20 a pound.

Other changes are: Cosein, from 61½¢ per lb. to 30¢;

alum, from 1¢ per lb. to 4¾¢; soda ash, from 65¢ per 100 lbs. to \$4.00¼ rosin, from \$3.75 per bbl. to \$5.90; bleached sulphite, from \$2.65 per 100 lbs. to \$4.50 to \$5; satin white, dry wt., from 5¢ per lb. to 9¢; foundry wires, from 29¢ per sq. ft. to 39; thirds and blues (rags), from \$1.35 per 100 lbs. to \$2.12½; bleach, from 1¼¢ per lb. to 13½¢ (unobtainable); lumber for cases and frames, from \$13.25 per M. ft. to \$18.50 per M. ft.; woollen and cotton felts advanced 10 per cent.

PULP AND PAPER NOTES.

Beaver Bag Manufacturers, Limited, 80 Colborne St., Toronto, makers of paper bags, have made an assignment for the benefit of their creditors.

Benjamin Pearce, envelope manufacturer, 350 Adelaide St. West, Toronto, recently made an assignment to Charles A. Hendry. The machinery and equipment will be sold by Auction on March 15.

William G. Logie, son of James Logie, paper mills representative, Toronto, who has been associated with his father for some time, has enlisted and is now a member of the 54th Battalion, Canadian Field Artillery, in camp at the Canadian National Exhibition Grounds.

W. J. Trimble, of Toronto, who has the contract for the erection of the extension to the Interlake Tissue Mills, Merritton, which will cost \$40,000, and be built of steel, brick and concrete, intends starting construction just as soon as the frost is out of the ground. The addition will be 148 feet long, 72 feet wide, and three storeys high, and will be devoted to specialty lines.

Alex. White, who has been manager for some years of the Toronto branch of W. V. Dawson, Limited, wholesale stationers, 64 Wellington St. West, Toronto, has been promoted to the management of the Montreal business of the firm. Many friends in the trade will wish him every success in his new position. Mr. White is favorably known, and was at one time on the staff of Buntin, Reid Co., Toronto.

So incessant is the rush of orders with all paper mills that a number of them have withdrawn prices, and many plants are endeavoring to get others to help them out. All wholesalers and large customers seem to want to put in record stocks, and ask for deliveries with great haste. All kinds of board have recently advanced from three to six dollars per ton, and in the case of the better class of board the increase has been heavier. Paper bags have also taken another shift, and now the discount off list prices on manila bags is 50, 10 and 5, and on kraft 40 and 5.

The Legislature of New Brunswick will, at the present session, provide for the early completion of the St. John Valley Railway, ensuring not only direct connection with the east and west sides of the harbor of St. John, but also, an independent route from that city to the New England States. The road will be connected by a spur line with the Maine Central system, and thus a new channel will be afforded for the export of pulp, paper and forest products from the northern part of the province. The revenue from the lumber cut in the province during the past year was the largest on record.

UNITED STATES NOTES

An increase of \$32,783 in net revenue is shown by the annual report of the International Paper Company, during the past fortnight. Total net for 1915 was \$3,121,681, and after deducting \$1,902,166 for the interest and depreciation charges, there was a surplus of \$1,219,515. Payment of \$448,134, leaving a surplus of \$771,381, against \$689,575 for 1914. President P. T. Dodge, in the report, said that the gain in earnings last year was brought about despite "many unusual and trying conditions," resulting from the European war. Mr. Dodge also commented on the alleged injustice of the free admission of newsprint to the United States from Canada province in placing restrictions on the exportation of wood from Crown lands to American mills. The company owns about 3,000,000 acres of woodland in Canada.

The Pulp and Paper Manufacturers Traffic Association has requested to appear as an intervener in Docket No. 8612, Lake Superior Paper Company, Ltd., vs. M. St. P. & S. S. M. Co., et al. The petition for intervention states that its membership consists of 39 companies operating about 60 wood pulp and paper mills at points in Wisconsin and Michigan, and that they ship in competition with the Lake Superior mills. They will protest against the changes in rates asked for, as they fear it would jeopardize their sales in the competitive markets.

Albert Comstock, receiver of the Norwich Paper Mills Company, Norwich, Conn., has been granted permission by a judge of the Superior Court to sell the dyestuffs and colors in stock, at the mill. There is a great demand for coloring material at present, and it was stated in court that the colors on hand, which had cost approximately \$900, could be sold for \$6,000 at the present time.

The Appleton Coated Paper Company, of Appleton, Wisconsin, has decided to open headquarters in Chicago, Ill., and have opened an office in the Lytton Building on Jackson Boulevard. The office will be in charge of Mr. Smith.

The West End Paper Company, with mills at Carthage, N.Y., has just closed a contract with Millard & Rice, of Copenhagen, for the furnishing of a large amount of pulp wood from the town of Montague. The wood will be delivered to the paper mill at the rate of five thousand cords each summer, and will be floated down Deer River and the Black River to the mill during the spring freshets. The conveyor will be erected at Carthage, which will be cut into two feet lengths and floated loose down Deer River and placed in rafts at the juncture with Black River. It is expected that it will take several years to complete the contract.

Workmen are busy at the Rex Paper Company's new mill at Kalamazoo, Mich., in setting the machinery in place. The paper machine purchased from the Beloit Iron Works has been delivered, and within the next six weeks it will probably be ready for operation.

The machine 104-inch trim is of the latest improved make, and will be the only one installed in the mill.

The American Straw Board Company announces the appointment of James J. Boyd, as manager of their Uncas Mill at Thamesville, Conn. Mr. Boyd will also continue the management of the New England agency, which office will be removed from 185 Devonshire street, Boston, to the Uncas Mill.

The William Gray Co., dealers in paper mill supplies, who have been located for a number of years at 167 West Washington Street, Chicago, Ill., have leased new quarters in the Stock Exchange Building, and will remove to them about May 1. The building in which their office is now located has been leased for a term of years, and will be re-modelled and used for hotel purposes, which necessitates the vacation of premises by lessees between now and May 1.

D. L. Bellinger, of Finch, Pruyn & Co., Glens Falls, N.Y., supplemented his ground wood report to the Technical Association of the American Paper and Pulp Association at the recent convention, with the following questions.

1. What is the best method of constructing a concrete roof suitable for machine room in a cold climate? How does the cost of such a roof compare with the ordinarily plank roof covered with a Barret specification or similar top? Compare the condensation trouble with the two roofs.

2. Have any of the members tried to drive very long cable conveyors with two motors, one driving a sprocket at each end? The motors would, of course, have to have the characteristics of the series—would D. C. or the cascade connected A. C., both controlled from a single point. The idea is to divide the stress on the bottoms and cable by two.

3. What type of bearing has proved most satisfactory for pulp grinders? What lubricant is used?

The George R. Dickinson and the Norman, divisions of the American Writing Paper Company, suspended operations early this month because of the shortage of pulp. Both are again operating this week. The freight congestion is blamed for the shortage of pulp. The American Writing Paper Company now has large shipments of pulp on the road and as soon as these arrive the situation will be relieved.

The following notice has been issued by the American writing Paper Company. We find it necessary, because of the continued extreme increase in the cost of all raw materials entering into the manufacture of paper, to again advance prices of all grades of paper of our manufacture as follows: All grades of book paper, $\frac{1}{4}$ c per pound added to the present base price. Jute and rope papers, prices quoted only on publication. All other grades of papers costing 15c per pound and up, 10 per cent to the present base price, instead of 5 per cent. Papers costing less than 15c per pound, 20 per cent to the present base price instead of 10 per cent.

This notice also cancels all previous quotations on special grades of paper."

At a meeting of the directors of the Bryant Paper Company held during the early part of the month at Kalamazoo, Mich., the officers were empowered to order two paper machines to be delivered during the coming summer. This action follows the decision of the stockholders made some time ago to erect a new two-machine mill in order to take care of increased business.

C. H. Tiffany, traffic manager of the New England Paper and Pulp Association, of Boston, Mass., appeared before Special Examiner John H. Howell, of the Interstate Commerce Commission in Boston during the past fortnight to testify in the matter of the petition of the New Haven Railroad to retain and operate its sound boats. Mr. Tiffany's testimony sounded the keynote of the situation, when he favored the granting of the petition, stating that the separation of the steamboat lines from the railroads would diminish the quality of the service.

The Diamond State Fibre Co., Bridgeport, Pa., has just placed an order with the Moore & White Co., Philadelphia, for a 130-in. Fourdrinier machine, to be adapted for the various grades of paper which the company makes, namely, waterleaf for the vulcanized fibre glassine and waterleaf for vegetable parchment.

With a view to guarding against all possible accidents to the employees of the International Paper Company at Rumford, Me., the company has decided to enclose all machinery in steel net work wherever practicable. The work is now in progress, and will cost about \$12,000.

The strike at the Colonial Board Company, manufacturers of binders board at Manchester, Conn., has been settled. Similar strikes at Williams Foulds & Company, Inc., manufacturers of button, straw, binders and leather board, and at the Lydall & Foulds, Paper Company, Inc., of the same place, manufacturers of chip, plain and mill-lined strawboard have also been settled, the strikers being given an increase of \$1 per week, or \$11 per week instead of \$10.

PAPER TRADE FLOURISHING.

Mr. Carl Riordon, Vice-President and Managing Director of the Riordon Pulp & Paper Company, Limited, in an interview in the Toronto Globe, states that the Canadian mills are now working from 85 per cent to 100 per cent of capacity, and that the paper and pulp trade is good. The demand for newsprint is slightly greater than the supply. Kraft paper is continually working higher owing to the scarcity of kraft pulp. He expected the whole industry to show a great improvement this year.

PAPER FREIGHT RATES ADVANCED.

The United States Commerce Commission declared reasonable the proposed increase from 18.9 to 20 cents per 100 pounds in blanket rate on newsprint paper from New England and northern New York to points east of the Mississippi as far as PiPittsburgh and north of the Ohio river. The proposed increases from Alexandria, Ind., and Sheboygan, Mich., to eastern points were declared not justified.

Wood Pulp and Paper in Russia

There may be an opportunity for Canadian pulp and paper men to do a considerable business with Russia following the war. Up to the outbreak of hostilities Germany supplied the bulk of the chemical and mechanical pulp used by Russia. The following table shows the imports into Russia of chemical and mechanical wood pulp in 1913 and 1914, and the principal sources of supply:

Countries of origin:	Chemical Pulp.		Mechanical Pulp.	
	1913. Tons.	1914. Tons.	1913. Tons.	1914. Tons.
Finland	4,057	13,020	16,032	13,250
Germany	2,946	(a)	3,136	(a)
All other countries	1,816	2,440	1,398	2,620
Total	8,819	15,460	20,566	15,870

(a) Not available.

The figures for 1913 include the imports over all frontiers, but only about 1½ tons of mechanical wood pulp and 15½ tons of chemical wood pulp were imported over the Asiatic frontier in that year; the figures for 1914 refer to the European frontier only. The figures given for chemical pulp in both years include a small amount of pulp from rags, straw, peat, etc.

The Russian wood pulp industry is steadily growing, however, as is illustrated by the following figures:—Mechanical wood pulp, 20,592 tons in 1900, 41,040 tons in 1908, 49,608 tons in 1912; wood cardboard, 12,708 tons in 1900, 22,950 tons in 1908, and 31,070 tons in 1912; chemical wood pulp, 28,922 tons in 1900, 119,092 tons in 1908, and 170,082 tons in 1912. For the last few years an increase of capital invested in this industry is noticeable, but on the whole the output of wood pulp in Russia is limited in comparison with the production of other countries of far smaller forest areas. Russia exports a comparatively small quantity of wood pulp. In 1913 the exports of this article were valued at £87,000, and of paper at £30,000. Much of the raw material hitherto exported from Russia to Germany should be utilized in Russia for the production of wood pulp, cardboard, and paper, the demand for which is growing both in Russia and abroad.

CAMPAIGNING FOR PAPER STOCK.

In some centres in the United States paper jobbers have launched a plan for securing paper stock which they hope will result in the acquisition of a weekly additional amount of raw material for the use of the mills supplying them with the finished product. Advertisements have been inserted in the classified departments of all the newspapers for old newspapers and magazines, which are many times kept for years in the garrets of homes before they are given away or burned.

THE PINE BLISTER RUST.

J. G. Peters, of the United States Forestry Bureau, says that pine forests valued at more than \$400,000,000 in the United States are menaced by a new tree disease, known as pine blister rust, which has spread to that country from Europe within a few years.

Wood Pulp Industry in Australia

(Excerpt: The Weekly Courier, Launceston, Tasmania)

Wood-Pulping Industry.

A great deal of optimism has been dissipated by the report of Mr. E. Surface, consulting engineer in forest products, Madison, Wis., (U. S. A.), on the possibilities of converting Tasmanian forest timbers into pulp for paper making. The point of the expert's decision is that it is not a practicable scheme; in fact, our woods are not as suitable as some of our non-expert enthusiasts have been proclaiming. Mr. Surface examined myrtle (or beech), swamp, gum, blue gum, and stringy bark, but found that their manufacture into pulp for sale would not be a feasible enterprise from the profit standpoint under the present or even under normal conditions. While the manufacture of the woods into pulp, and then into paper, could yield a profit under very favorable conditions, yet he could not consider it a sound industrial venture, and surely not an attractive one. The main difficulty lay in the woods themselves. Their hardness, natural color, and comparatively short fibre confined their possible use to only one class or pulp, "soda pulp", with a limited usefulness for paper-making in general. The comparatively small yield of paper-making fibres that might be obtained from these woods meant a comparatively high cost of manufacture. He also stated sawdust and indiscriminate sawmill waste were not suitable. The report unfortunately is distinctly against the venture. At this there will be a general disappointment. All the high hopes that have been built up concerning a vast wood-pulping industry in this state will now be laid aside, as this expert report may be said to have obliterated the prospect of any enterprise in this direction. The small samples of good paper that have been made from our woods were like the gold in some of our mines. The gold is there, but it does not pay to take it out.

Before joining the Australian Confederation the State of Tasmania was a separate British Crown Colony and in the early days was known as "Van Dieman's Land." Hobart, the capital, is distant from the southernmost cities of Australia about two or three days journey by fast steam packet. The island of Tasmania is about the size of Ireland or of Portugal. It is noted for its wonderful forest wealth, which it still largely undeveloped, even though the inhabited part of the Colony was far advanced socially and industrially long before the first settlements were made on our own West Coast. In certain world markets Tasmanian timbers are much prized for structural and ornamental work. For a number of years the Tasmanian government has been considering the development of a wood-pulp and paper industry to take advantage of its forest and waterpower resources and to supply the Australasian market. Several resident and English engineers and analysts had reported rather favorably on the prospects and certain State-aided, as well as Government-owned, plants were lately in course of promotion. Before making several large appropriations of money and alienating public lands for these

projects, the more conservative members of the Government wished to make sure of their attitude toward the proposed industry by securing an independent investigation and an absolutely unbiased report on the propositions.

Mr. Surface is an officer of the United States Department of Agriculture, Forest Service, stationed at its Forest Products Laboratory, a research institution maintained in co-operation with the University of Wisconsin, Madison, Wisconsin. Taking leave of absence, he visited Tasmania in the winter of 1914-15, in response to that Government's invitation to report on its wood pulp and paper manufacturing propositions. This, of course, was with the approval of the State Department at Washington, since Tasmania is a foreign dependency.

SWEDEN'S PULP MILLS.

As a result of the Swedish embargo fresh attention has been directed to the forest resources and the pulp and paper industry of that country. Of the 112,000,000 acres which constitute the area of Sweden no fewer than 49,420,000 acres are computed to be covered by forest, and of this about 30 per cent is stated to belong to the Swedish Government. A huge and steadily increasing proportion of these forest resources are utilized in the production of wood pulp.

According to the latest official returns, namely, those for 1913, Sweden's production of mechanical pulp was 1,186,577 tons, valued at 126,000,000 kronor, and of this no less than 847,837 tons were exported, the remainder being used by Swedish paper and board mills, many of which—about 32 per cent—have plants in operation for the manufacture of their own pulp. Altogether in 1913 there were 168 mills producing pulp and paper, which are classified as follows by the Swedish Board of Trade:—

	No. of Mills.	No. of Men Employed.
Wood pulp mills only	114	11,185
Wood pulp mills combined with pulp board factories	13	760
Wood pulp mills combined with paper mills	30	7,520
Wood pulp mills combined with pulp board and paper mills	11	3,205

Mechanical wood pulp only was produced in eighty-three mills, while seventeen others manufactured it in addition to chemical pulp, the remainder confining themselves to the output of chemical pulps (sulphite or sulphate). Of the total production of 1,186,577 tons of wood pulp of all kinds, it is estimated that 589,702 tons consisted of mechanical, 392,343 tons of sulphite, and 204,532 tons of sulphate. Of the gross output only about 30 per cent was retained for home consumption, the remaining 70 per cent being exported. As a matter of fact Sweden's export trade in wood pulp in 1913 represented 12.2 per cent of her total export trade, taking second place in importance after timber. The suspension of more than half of her exports of wood pulps, and that of the most valuable kind, must therefore have been an extremely serious matter from the point of view of the Swedish manufacturers, who have devoted an enormous amount of capital to the development of the industry.

Canada as a Future Source of Supply

It is to Canada and Newfoundland that the eyes of those who favour the development of the wood pulp resources of the Empire are turning, and strong hopes are entertained that before many years have elapsed these wonderful countries will supply the British paper manufacturer with the bulk of his requirements of wood pulp. In this connection it is interesting to note that according to estimates of the Forestry Branch of the Department of the Interior the total area of land covered by timber in Canada is between 500 and 600 million acres, and of this between 200 and 300 million acres are covered by timber of commercial size. It is indicative of Canada's appreciation of the importance of conserving her forest resources that her forest reserves have grown from 7,413,760 acres in 1901 to 152,833,955 acres in 1914. In the latter year the total value of the forest products was estimated at \$176,672,000, of which \$15,500,000 was the estimated value of the pulp wood produced, compared with \$10,000,000 in 1911. The wood used in the manufacture of pulp in 1914 amounted to 1,224,376 cords, producing 934,600 tons of pulp, or an increase of about 30 per cent upon the figures for 1912. Spruce, balsam, fir, and hemlock, in the order named, are the principal woods used, but jack pine is also being increasingly employed in the manufacture of pulp. More than 50 per cent of the pulp wood is converted into mechanical pulp, 34 per cent into sulphite, and 11 per cent into sulphate, a negligible quantity being converted into soda pulp. This country's imports of wood pulp from Canada consists almost entirely of moist mechanical pulp, the quantities for the last three years being 69,090 tons in 1913, 110,331 tons in 1914, and 37,501 tons in 1915. The United States is Canada's principal market for pulp. During the fiscal year ended March 31st, 1915, she exported 240,331 tons of chemical pulp, of which 90 per cent went to the United States and 5 per cent to Japan. Of the remainder, about 105 tons went to Australia and 40 tons to the United Kingdom. The total exports of mechanical pulp amounted to 222,976 tons, of which 144,680 tons were absorbed by the United States, 74,776 tons by the United Kingdom, and 3,520 tons by France. According to the unrevised returns for the seven months ended October last, which are just to hand, Canada's exports of chemical pulp during that period amounted to 86,662 tons, of which 560 tons came to the United Kingdom, 81,286 tons going to the United States, and 4,834 tons to other countries. Of mechanical pulp she exported during the same period 126,943 tons, the United Kingdom taking 16,061 tons, the United States 92,522 tons, and other countries 18,360 tons.

Newfoundland, which now leads all other countries in its export of "news" paper to the United Kingdom—last year it amounted to 477,896 tons, compared with 323,792 tons from Norway—possesses wooded lands estimated to cover 10,000 square miles, with an average yield of ten cords of pulp wood, 1,000 superficial feet of lumber, equivalent approximately to 50,000,000 of lumber. Britain's oldest colony exported in the tons of wood pulp and 6,400,000,000 superficial feet last six months of 1913 44,000 tons of pulp and 33,700 tons of paper, but these figures have now been left

far behind, and there is no doubt that within the next few years the development will be even more pronounced.—The Paper Maker and British Paper Trade Journal.

Ottawa Notes

(Special Correspondence)

Ottawa, Ont., March 10.—Canadian pulp and paper companies are watching with great interest the gradual unfolding of the details of the new business profits war tax in Parliament. Quite a number of them will be affected by it, as there is no doubt that with the abnormal demands for some lines of paper production, and in spite of the increase in the prices of raw materials, many Canadian pulp and paper firms have made over 7½ per cent profit.

Amendments introduced by the Minister of Finance in the Commons last week have removed several of the more serious objections taken by the trade against the proposal to tax one-quarter of excess war profits. For instance, in the discussion of the taxation in the House the E. B. Eddy Company, of Hull, which has a low capitalization, but a large reserve, had been employed to point the alleged discriminatory effect of the proposals. Now, however, the Eddy Company will be allowed to treat a large part of its reserve as capital and will be allowed to earn profits thereon. One inequality in the taxation, however, will still remain, and this was illustrated by an Opposition speaker in Parliament by comparing the case of the Eddy firm, which is a joint stock company, and as such will be allowed to earn only 7½ per cent., with that of J. R. Booth, which, as a private firm, will be allowed to earn 10 per cent, although as well able as the Eddy Company to contribute to the proposed revenues.

The formation of a Canadian forestering battalion, which was asked for by the War Office some time ago, is now under way, and local lumber and pulp and paper firms are now being drawn on for recruits. In Great Britain there are large resources of standing timber which can be cut down and utilized for building operations, trench construction work, etc. It is proposed to raise companies of experienced woodsmen from British Columbia, Alberta, Northern Saskatchewan, Quebec, New Brunswick, and the Ottawa Valley. A number of prominent lumbermen and paper manufacturers are co-operating in recruiting the new battalion, which will be commanded by Lt.-Col. Alex. McDougall, of Ottawa. Mr. Gerald White, M.P. for North Renfrew, Ont., and B. H. Hepburn, M.P. for Prince Edward, Ont., both of whom have been connected with lumbering, will probably be the majors of the new battalion.

A complaint as to the quality of paper and stationery furnished in the House of Commons was made in the House last week by members. A year ago a similar complaint was made, and it was then stated that a large quantity of the inferior stationery complained of was on hand, and that it was desired to get rid of it. This year's supply appears to be just as bad, however, and steps will be taken to have it improved. The amount of money spent for printing, printing paper and binding by the Commons is \$300,000 annually, so that if the firms now supplying the paper complained of are not able to justify its quality it may mean the diversion of large orders.

Mac.

PULP AND PAPER NEWS

A. M. Huestis, of Toronto, has returned after spending a holiday at Atlantic City and other points south.

F. L. Ratcliff, President of the Ratcliff Paper Co., Toronto, and wife, are spending a few weeks in the Southern States.

Hugh E. Ashton, President of the London Printing and Lithographing Co., London, Ont., died recently in that city. He was one of the most esteemed men in the trade with which he had a long experience.

In the budget speech in the Ontario Legislature, Hon. T. W. McGarry, Provincial Treasurer, estimated that the receipts from lands, forests and mines for the coming year will be \$1,800,000. The estimated expenditure on Crown Lands is \$1,792,840.99.

F. A. Ritchie, of Ritchie and Ramsay, Limited, coated paper manufacturers, Toronto, has gone on an extended holiday trip to the West Indies and British and Dutch Guiana. He is accompanied by R. L. Patterson, who is widely known to the publishing trade through his long connection with the firm of Miller and Richard, type founders, as Canadian manager.

A license has been granted to the Anglo-American Tale Corporation, Limited, a corporation created under the laws of New York State, to do business in Ontario, and to expend the sum of \$50,000 in the province in mining operations. Thomas Carswell, of Madoc, has been appointed their representative in Ontario, and the company will carry on work in Hastings County.

Andrew Ness, of the Ness Trading Co., Glasgow, Scotland, was in Toronto and Montreal recently, on his way to Vancouver. He anticipates a big demand for forest products from British Columbia during the period of construction that will characterize the waning days of the war, and thinks that steps should be taken at once to develop the trade opportunities that will exist for that province with the Allied Powers.

The non-returnable egg case system has gone into effect and the cost of the case will be added to the price of eggs. This step is taken with a view to improving the quality by removing one cause of musty and inferior eggs, and was brought about by the Canadian Produce Association. The top size and bottom of the non-returnable case will be three-sixteenths of an inch in thickness and the ends and centre seven-sixteenths of an inch.

Contracts have been let for the extensions to the Riordon Co. mill at Merriton, where considerable building operations will be carried on in connection with the installation of the electrolytic bleaching

equipment. The tonnage will be thirty tons per day. A higher grade of strong bleached sulphite will be made, and it is expected that the bleaching plant will be in operation early in the summer. Contracts for the equipment have also been awarded. A new filtering plant will also be put in.

Hon. Francis G. Hugo, who is Secretary of State for New York State, and also secretary of the Remington Paper and Power Co., Watertown, N.Y., recently addressed the Ontario Motor League in Toronto, and urged reciprocity in automobile licenses between New York and Ontario. It is now understood that the Ontario Government will pass the necessary legislation at its present session to carry out the arrangement advocated by Mr. Hugo. A number of cities have passed resolutions along this line.

The annual report of the F. N. Burt Co. shows the largest earnings in the history of the company who have plants in Toronto and at many points in the United States. The profits in 1915 were \$222,267, as company are now running to capacity on paper boxes, compared with \$212,392 in 1914. The factories of the counter check boxes, etc. The company paid \$168,264 in dividends and transferred \$45,000 to realty and plant reserve account, leaving \$161,266 to carry forward. The general statement of the company shows \$107,413 in cash assets, and a credit balance of \$118,000 in accounts. S. J. Moore, of Toronto, is President of the company.

A deputation from the Trent Valley waited upon Sir Robert Borden and urged that Eastern Ontario be given the opportunity now enjoyed in Western Ontario in the matter of power from the Ontario Hydro-Electric Commission. The obstacle lies in the disputed jurisdiction between the Provincial and Federal Governments. The water powers were declared to be the property of the Dominion, and the Federal Government had leased them to private companies and individuals. It was urged that the Federal authorities step in and take control of the power by paying fair value with reasonable interest to the investors. Premier Borden expressed sympathy with the contention, and said that the matter of leases would be fully investigated. There are a number of pulp and paper mills on the Trent Valley water system.

Another sign of the confidence in the future of the pulp and paper industry in Canada is that the Pacific Mills, Limited, who some time ago took over the assets of the Ocean Falls Co., Limited, of Ocean Falls, B.C., intend reorganizing the industry in that town. Work will soon start on the construction of a new paper mill, which will turn out seventy tons a day of news print and forty tons of kraft. The plans are now being prepared by George F. Hardy, of New York. The pulp mill will also be overhauled and put in oper-

ation as well as the saw mill. The Ocean Falls Co. was incorporated in 1909, and the pulp mill and saw mill were run for a time, but in 1913 the concern went into the hands of a Receiver, A. B. Martin, of Vancouver. Pacific Mills, Limited, who now have the property, are capitalized at \$9,500,000, of which \$2,000,000 is six per cent, preferred shares, and \$7,500,000 common shares. There will be a bond issue of \$3,000,000. J. H. Lawson is the President of the company, W. S. Lane, secretary, while N. R. Lang, S. D. Brooks, W. S. Lane, A. B. Martin and J. H. Lawson constitute the Board of Directors. They are residents of Vancouver, and the managing director is Mr. Martin. Some of the bondholders in the old company are interested in the new one. Arrangements are being made for an early start in developing the plant of the company. A force of men will be set to work preparing for construction, while another force

will be sent to the limits to get out the necessary supply of pulp wood. When all the units are completed and in operation, it is expected that, in the mills and bush, there will be seven to eight hundred men engaged.

Money Values of Shade Trees

The changing views of Canadian municipalities regarding the importance of shade trees on the public streets is one of the most striking developments of recent years. Once in a while this development is given a picturesque illustration through the courts which thereby fastens upon the public imagination the meaning of arboriculture as no technical lectures or literature possibly could do. A construction company destroyed certain trees that obstructed its way on a New York thoroughfare and a few weeks ago was compelled to pay \$500 for each tree and \$1,000 additional for damages. A few years ago a decision of this kind would have created amazement: today the general sentiment strongly applauds the courts for such a sensible courageous stand.

Twenty years ago a proposition was seriously placed before the Ottawa City Council that all trees on the streets should be removed. This monstrous notion was deliberated upon for some weeks before common sense prevailed. While the Councils of today would treat a similar suggestion as a madman's joke, it does not follow that vandalism in the matter of tree destruction is adequately guarded against. In practically all our towns and cities, the attitude of Councils is purely negative. Occasionally a town engineer makes recommendations in specific cases, but mostly the ruin or preservation of what are common municipal assets is left to the sweet will of individuals. In almost any municipal districts, one will discover cases of tree slaughter to 'show off' the architecture of a new building, although in doing so, the builder frequently violates the rights of surrounding property owners and the rights of the users of the thoroughfare. That trees on the public streets have a value recognizable in law has been put to the test so frequently in recent years as to drive home a much-needed lesson. Courts have gone so far as to declare that destruction of shade trees detracted from the value of an abutter's property to amounts running from \$50 to \$500.

Prof. T. J. Burrill, of the University of Illinois, cites the following instance of the money value of trees: "Two lots on the same street were offered for sale. These lots were essentially similar in all respects, save that in one case there were four trees, about twenty-five years old. Two of these trees were in the street and two on the lot inside of the street. In the case of the other lot, the only trees (two of them) were on the street, and these were less than half the age of the others. The prices asked for the lots were respectively \$2,500 and \$1,500. A man wishing to build compared the two lots and decided in favor of the \$2,500 one, the lot, namely, with the four trees—\$1,000 for four trees, or we might say for two trees. This lot had sixty-six feet frontage and contained about one-fourth of an acre. On such an acreage the net profit for twenty-five annual crops of corn might perhaps have been \$25. And each crop would have received more care than did the four trees during the whole of the twenty-five years. \$1,000 to \$25—the contrast is instructive. Yet there are today persons of intelligence, who in looking forward to results, will prefer to trust the corn."

It is to be noted with satisfaction that the more influential Canadian newspapers are taking up cudgels in defence of the shade trees. In Toronto, Ottawa and Montreal editorial comments upon the New York case cited above, we find such determined expressions as the following:

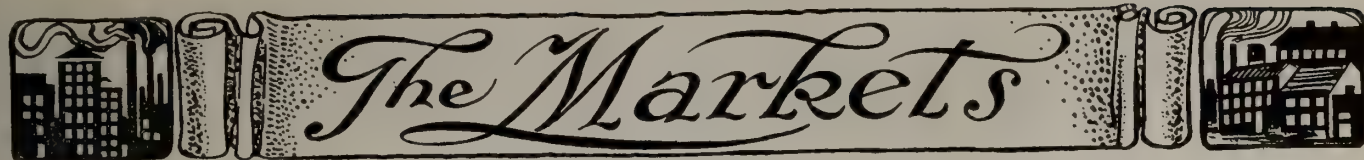
"People who are past the barbarian stage will applaud the decision, and in the interest of the public it should be given the widest possible publication. It is a notorious fact that in most Canadian cities and towns trees are not held at a proper value. The other summer, the civic authorities in Montreal actually destroyed some of the most beautiful shade elms to make way for a monument, a bit of common vandalism that should have been punished with imprisonment.

"Here in Ottawa, we are blessed with some fine shade trees in our streets, but to anyone who takes the trouble to watch how they are being cared for it is evident that we could give them more attention than at present. Telephone poles and wires are often placed right beside some of the finest shade trees, to their inevitable detriment; and sometimes in opening new streets sufficient care to safeguard trees is not taken. It is a matter which might profitably engage more attention from the city authorities."

—Canadian Forestry Journal.

THE ANGRY TREE.

Did you know that a tree can get angry? There is a kind of acacia in Nevada that not only is "touchy," but as the gardener put it, "goes very mad," says a writer in *Answers*. It is about 8 feet high, and is a very rapid grower. When the sun sets it is ready to go to sleep, shuts its leaves together and coils up its twigs just like a pigtail. If any one pulls that tail—well, the tree doesn't squeal, but it flutters and moves uneasily, and seems to be deeply agitated. If it is ever disturbed by a shock, such as transplanting, the leaves stand out in all directions and quiver violently. Strangest of all, they send out a pungent, nauseating odor that is most unpleasant. It takes this bad-tempered tree an hour or two to get back into good humor.



The Markets

CANADIAN MARKETS

Activity and firm prices characterize all lines of the paper trade in the Dominion and all plants are operating from 85 to 100 per cent capacity. Of course, many pulp and paper mills cannot take advantage of the present high figures prevailing for their products owing to having to fill a number of contracts under the old order of affairs.

The demand for news print exceeds the capacity of the mills, and probably for the first time in the history of this business in the Dominion, requisitions are ahead of the tonnage, which is now about two thousand tons daily, with about three-quarters of the output going to the United States. For the last few months the export business has gone ahead very materially, and shipments to the American market now average about a million and half dollars a month. Prices are stiffening on all new contracts, and one sales manager predicts that the advance will average five dollars per ton, which is essential owing to the high and constantly ascending figure for sulphite, Fourdrinier wires, paper machine felts, labor, etc. Bronze wires are being replaced, he said, by brass wires, which last only half the time or less, and felts have jumped one hundred and fifty per cent, while the quality is reported to be not as good.

In regard to the recent embargo placed by Great Britain on certain imports, such as pulp and paper, the Canadian news trade is only about ten thousand tons a year with the Mother Country, and the restriction will not be felt to any appreciable extent. The market for Canadian paper is so strong in the United States that if exports of news are not allowed to Britain, there is no apprehension existing among large makers of print paper for export. The embargo may affect the imports of kraft paper, which number a few thousand tons a year, but the home consumption of kraft is growing to such an extent that no sleep need be lost over the situation.

In the sulphite arena, imports are getting lighter all the time, and as all the home mills are busy, the demand will be greater. Prices are soaring, and no contracts are made except for immediate delivery. Buying in quantities is not brisk, there being a tendency to hold aloof. The hope is expressed that something may turn up to relieve the tension. Unbleached sulphite is going skywards all the time, and the prices now quoted in Canada are believed to be the highest on record. The market is becoming more acute, and quantities available scarcer all the while. Ground wood pulp is firmer, and there is a good demand at slightly increased prices. The water situation in the Dominion is good, and no difficulty is being experienced on this score.

In regard to the color situation a leading Canadian firm in a note to their salesmen, say the state of affairs grows more and more acute. Recently they were offered a barrel of yellow dye, and bought it at a cost of \$1,650. The price of this in ordinary times would be about \$150. The inference is plain. A few little

lots of aniline dyes, and very small lots they are, are offered at an advance, some colors being from one thousand to two thousand per cent higher than before the outbreak of the war. Colored papers must advance again and rapidly. The firm state that they are not desirous of taking large orders, that would tend to consume their rapidly decreasing stock of colors.

Writing to their Canadian customers an old-established paper house of Manchester, England, who have done business in the Dominion for many years, state that their Canadian representative will not make his customary spring trip this year, as they feel certain that, under existing circumstances, Canadians would not expect such a visit. The firm, however, add that they desire so far as possible to keep their overseas customers furnished with the lines they have been in the habit of taking, and will do their utmost to supply their needs if orders are mailed with a greater margin of time for delivery than usual, and are limited, as far as possible, to required quantities actually.

Book, writing, bond and litho mills are very busy, and have not been rushed with orders to the extent that they now are, for several months—in fact, since the war began. Much business is being placed evidently in fear that there will be still further advances in prices. The mills have got together and adopted certain trade customs, which should obviate much friction and misunderstanding between wholesale customers and producers. These trade customs are along the line of those prevailing in the American Writing Paper Association. The following plants have agreed to them—Canada Paper Co., Kinleith Paper Co., Provincial Paper Mills Co., Howard Smith Paper Mills, E. B. Eddy Co., Rolland Paper Co., and Toronto Paper Mfg. Co. Two sets of rules have been adopted, one set dealing with the book and litho papers, and the other covering writing papers.

Casein is now practically unobtainable, and one of the biggest producers of book, bond, ledger and writings, recently issued the following, showing the various increases in prices since the war broke out:—

Bleached Sulphite, was \$2.65 cwt., now \$3.75 to \$4.25 cwt.

Bleaching Powder was 11¼c. per lb., now 13c. (and unobtainable).

Soda Ash, was 65c. cwt., now 2½c. per lb.

Rosin, was \$3.75 bbl., now \$6.50 bbl.

Satin White, was 5c. per lb., now 9c. per lb.

Casein, was 6½c. per lb., now 20c. to 30c. per lb.

Alum, was 1c. per lb., now 3c. per lb.

Aniline Colors, was 40c. per lb., now \$10.00 per lb.

Soda Paper, was \$12.00 to \$15.00 per ton advance.

Wrapping, tissue, and toilet paper plants are rushed to the limit with orders, and one mill has sent out information to the effect that no new business can be accepted until after July 1st. Prices are very stiff, and there may be advances other than those which have gone into effect recently. The manufacturer to-day does not know where he is at in tabulating the cost of raw materials, while the labor problem is also becoming acute, due to so many employes enlisting. Coated paper plants are doing a fine business, and

board mills report that trade is very encouraging, even at the recently augmented quotations. Stocks of all kinds of paper have been very low and jobbers are making an effort to recover before any more increases go into effect. Every firm reports that the outlook for the coming year is much ahead of what it was twelve months ago.

In the rag and paper stock market, manilas and whites are still in big demand, and high prices prevail. There have been recent advances all along the line. There is some talk that mixed paper and folded news and overissues, the latter two now selling around 62 cents, may take a drop in a short time. It is feared by some dealers that pulp wood may become cheaper owing to the shortage of ships to take it across the Atlantic. The recent embargo on the export of cotton, and cotton and woolen rags from Canada has restricted the market for these commodities, to a certain extent, declared one firm, and efforts would be made to widen the demand at home. Another firm stated that their business would not be affected seriously, but that prices had advanced in the United States, making values there considerably higher than those prevailing in the Dominion.

Toronto quotations are:—

Paper.

News (rolls) \$2.05 to \$2.15 at mill, in carload lots.
 News (sheets), \$2.25 to \$2.30 at mill, in carload lots.
 Book papers (ton lots), No. 3, 4.50 up.
 Book papers (carload), No. 3, 4.50c to 5.00c.
 Book papers (carload), No. 2, 5.00c. to 5.25c.
 Book papers (ton lots), No. 2, 5.50c to 6.25c.
 Book papers (carload), No. 1, 6.25c to 6.75c.
 Book papers (ton lots), No. 1, 6.50c. up.
 Sulphite bonds, 6½ to 8c.
 Writings, 5c. up.
 Grey Browns, \$2.35 to \$2.75.
 Fibre, \$3.75 to \$4.75.
 Manila, B., \$2.85 to \$3.50.
 Manila No. 1, \$3.75 to \$4.75.
 Unglazed Kraft, \$4.70 to \$6.00.
 Glazed Kraft, \$5.25 to \$7.00.
 Tissues, bleached, 75c to 1.10c.
 Tissues, unbleached, 50c to 85c.
 Natural greaseproof, 8½c to 10½c.
 Bleached parchymns, 20c to 30c.
 Drug papers, whites and tints, 5c to 7c.
 Paper bags, Manila, 50, 10 and 5 discount.
 Paper bags, kraft, 40 and 5 discount.

Pulp.

Ground wood pulp (at mill), \$16 to \$18.
 Ground wood, \$20 to \$24, delivered.
 Easy Bleaching Sulphite, \$58 to \$60, del. in Canada.
 Easy Bleaching Sulphite, \$60 up, delivered in U. S.
 Sulphite, news grade, \$50 to \$56, delivered.
 Sulphite (bleached), delivered, \$100 up.
 Sulphate, delivered, \$50 to \$54.

Paper Stock.

White envelope cuttings, \$2.75.
 No. 1 soft white shavings, \$2.25.
 White blanks, \$1.10.
 No. 1 book stock, \$1.15.
 No. 2 book stock, \$1.00.
 Ordinary ledger stock, \$1.55.
 Heavy ledger stock, \$1.75.
 No. 1 Manila envelope cuttings, \$1.75.
 No. 1 print Manilas, 87½c.
 Folded News, 62½c.

Over Issues, 62½.
 Old white cotton, \$3.25.
 No. 1 cleaned mixed paper, 45c.
 No. 1 white shirt cuttings, \$6.00..
 Black overall cuttings, \$2.00.
 Thirds, blues, \$2.15.
 Black linings, \$1.75.
 New linings, flannelettes, \$4.25.
 Ordinary satinets, \$1.85.
 Flock, \$2.00.
 Tailor rags, \$1.85.
 Blue overall cuttings, \$4.00.
 Manila rope, \$3.25.
 No. 1 burlap bagging, \$2.15.

Quotations f.o.b. Montreal are as follows:—

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$50 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders: \$55 to \$60 per ton for small orders.
 No. 1 Book, 5¾c to 6c.
 No. 2 Book, S.C., \$5.00 in large quantities; \$5.50 in small quantities.
 No. 3 Book, M.F., \$4.50 in large quantities; \$4.75 in small quantities.
 Writings, 5½ to 7½c.
 Sulphite Bond, 6½c to 8½c.
 Writing Manila, 5c to 5½c.
 Cover Papers, 6½ to 10c per lb., according to colors wanted.
 Colored Posters, 5½ to 6½.

An extra charge of 10c per 100 lbs. will be made when Book and Writings are packed in frames, and 15c per 100 lbs when packed in cases.

Prices on wrappings now in effect:—

	Carload	Five	Two	One	Under
& Jobbers.	tons.	tons.	ton.	1 ton.	
Cleaver, per 100 lbs. . .	2.35	2.45	2.55	2.65	2.75
B. Manila, do.	2.75	2.95	3.05	3.15	3.25
Samson B., do.	3.35	3.45	3.55	3.65	4.00
No. 1 Manila, do.	3.75	3.85	3.95	4.05	4.15
No. 2 Manila, do.	3.10	3.20	3.30	3.40	3.50
Invincible Striped Man.,					
do.,	3.75	3.85	3.95	4.05	4.15
Fibre	3.75	3.85	3.95	4.05	4.15
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.					

NEW YORK MARKETS.

(Special to Pulp & Paper Magazine.)

New York, March 7, 1916.

Conditions in the ground wood pulp market are considered fairly satisfactory. The demand is active and practically all of the grinders are operating at a good capacity. Several plants, which have been shut down, are now working, and find little difficulty in disposing of their output. It is understood that this activity is due chiefly to the fact that all of the consumers of ground wood are busy, and using large quantities of stock. In many sections, frozen rivers have caused low water conditions, which prevents some of the news mills from running their grinding machines. This, of course, has forced such concerns to seek the market for ground wood pulp. Prices have been becoming firmer all of the time, and will undoubtedly continue so.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Air Compressors

Blethen, Hugh R., New York
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Air Hoists

Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.

Bagging

Smart-Woods Ltd., Montreal, Que.

Barbers

Beznar, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
Waterous Engine Works Co. Ltd., Brantford, Can.
Valley Iron Works, Appleton, Wis.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Mach. Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Tippet Arthur P. & Co., Montreal, Can.

Belting

Can. Fairbanks-Morse Co., Ltd., Montreal, Canada
Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Can.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones and Glassco, St. Nicholas Building, Montreal
Reddaway, F. & Co., Montreal, Can.

Belt Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio

Leaching Powders

Brunner, Mond & Co., Montreal, Can.
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Can.
Winn & Holland, Montreal, Can.

Lowerers

Sherbrooke Mach. Co., Sherbrooke, Que.

Oilers

Canadian Allis-Chalmers, Ltd., Toronto
Jenckes Machine Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Wire Cloth, Fourdrinier Wires

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Can.
Taylor, James, St. Francois Xavier Street, Montreal, Can.
Tippet, A. P. & Co., Montreal, Can.
United Wire Works, Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.

Table Conveyors

The Jeffrey Mfg. Co., Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.

Slender Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Crane

Northern Crane Works, Walkerville, Ont.

Main Crane

Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Main Blocks

Blethen, Hugh R., New York, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio

Main Conveyors

The Waterous Engine Works Co., Limited, Brantford, Ont.

Main Drives (Silent and Steel Roller)

Jones and Glassco, St. Nicholas Building, Montreal

Change Speed Gears

Jones and Glassco, St. Nicholas Building, Montreal

Chemicals, Colors, Etc.

Brunner, Mond & Co., Montreal, Can.
Klipstein, A. & Co., Montreal, Can.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Can.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
Winn & Holland, Montreal, Can.

China Clay

China Clay Co., Manchester, England
Klipstein, A. & Co., St. Peter Street, Montreal, Can.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.

Shippers

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Valley Iron Works, Appleton, Wis.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Ship Disintegrators

The Waterous Engine Works Co., Limited, Brantford, Ont.

Ship Screens

Beznar, Albert Machine Works, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Slutches

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes

Blethen, Hugh R., New York, N.Y.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Mach. Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.

Cranes—Overhead Travelling

Blethen, Hugh R., New York, N.Y.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.

Conveying Machinery

Caldwell, H. W. & Son Co., Chicago, Ill.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jeffrey Mfg. Co., Montreal, Can.
Northern Crane Works, Walkerville, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Process Engineers, Ltd., Montreal, Can.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures

Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Couplings

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.

Cut Gears

Jones and Glassco, St. Nicholas Building, Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.

Cylinders

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds

Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls

Capital Wire Cloth and Manufacturing Co. Ltd., Ottawa, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Johnson & Sons, C. H., St. Henry, Montreal, Can.
Marshall, T. J. & Co., Ltd., London, Eng.

Digester Lining

Panzl Digester Lining Co., Muskegon, Mich.
Preston's Digester Lining Co., Radcliffe, Eng.
Process Engineers, Ltd., Montreal, Can.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Digesters

Pusey & Jones Company, Wilmington, Del.

Digester Gauges

Schaeffer & Budenberg, Brooklyn, N.Y.

Drainer Bottoms

Snell, Samuel, Co., Holyoke, Mass.

Dryers

Bertram Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
Electric Lighting and Power Supplies
Forman, John, 248 Craig Street W., Montreal

Engines

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators

Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Scott, Ernest & Co., Fall River, Mass.

Exhausters

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery

Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Ltd., London, Eng.
Process Engineers Ltd., Montreal, Can.
Pusey & Jones Company, Wilmington, Del.

Exporters

Parsons Trading Co., New York, N.Y.

Felts

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Mont.

MILL SUPPLIES---Continued

- Adams, Ltd.**, St. Hyacinthe, Can.
Forritt, Joseph & Sons, Manchester, Eng.
Spencer, J. M. & Sons, Bury, England.
Tippett Arthur P & Co., Montreal, Can.
- Filters**
Chambers Ltd, 152 Bay Street, Toronto.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.
Pusey & Jones Company, Wilmington, Del.
- Friction Hoists**
Glens Falls Mach. Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Jenckes Machin Co., Sherbrooke, Que.
Pusey & Jones Company, Wilmington, Del.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Generators and Transformers**
Chambers Ltd., 152 Bay Street, Toronto.
Siemens Co. of Canada, Ltd., Montreal, Can.
- Grinders**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Hand Power.**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Helicoid Conveyor**
H. W. Caldwell & Son Co., Chicago.
- Hoists**
Blethen, Hugh R., New York, N.Y.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works Limited, Walkerville, Ont.
- Hoists—Chain Electric and Pneumatic**
Blethen, Hugh R., New York, N.Y.
- Iron Pulleys**
H. W. Caldwell & Son Co., Chicago.
Dodge Mfg. Co., Ltd., Toronto and Montreal.
The Waterous Engine Works Co., Limited, Brantford Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Jordan Engines**
Jones, E. D. & Co., Pittsfield, Mass.
Process Engineers, Ltd., Montreal, Canada.
- Knives**
The Waterous Engine Works Co., Limited, Brantford, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Crookes, Roberts & Co., Sheffield, Eng.
Hay, Peter, Knife Co., Galt, Can.
Tippet, A. P. & Co., Montreal, Can.
- Kollergangs**
Bertrams Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Pusey & Jones Company, Wilmington, Del.
- Laying Machines**
Chambers, Ltd., Toronto.
Collis & Sons, J., London, Eng.
- Locomotives, Electric, Storage Battery**
Co., Columbus, Ohio
- Paper Stock, Etc.**
Hough, R., London, England.
Pullan, E., 490 Adelaide Street, W., Toronto, Can.
- Paper and Pulp Machinery**
Beloit Iron Works, Beloit, Wis.
Bentley & Jackson, Bury, England.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertram's, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto, Can.
Dillon Machine Co., Lawrence, Mass.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Green Bay Barker Co., Green Bay, Wis.
Hamilton, Wm., Co., Peterboro, Can.
Harmon Machine Co., Watertown, N.Y.
Jenckes Machine Co., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Jones, C. H. & Sons, Ltd., Montreal, Can.
Johnson, J. & Co., London, E.C., England.
Marx, J. & White Co., Philadelphia, Pa.
Moore & White Co., Philadelphia, Pa.
Process Engineers, Ltd., Montreal, Canada.
Pusey-Jones Co., Wilmington, Del.
Rice, Barton & Falls, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Can.
Smith, S. Morgan, Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Valley Iron Works, Appleton, Wis.
Voith, J. M., New York, N.Y.
Walmsley, Chas. & Co., Bury, Eng.
Waterous Engine Works Co., Ltd., Brantford, Can.
Westbye, P. S., Peterboro, Can.
- Paper Machine Tachometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Paper Tester**
Chambers Ltd., 152 Bay Street, Toronto.
Marshall, T. J. & Co., Stoke Newington, London, England.
The Waterous Engine Works Co., Limited, Brantford, Ont.
Ellis H. Wilkinson, Toronto, Ont.
- Pneumatic Thickeners**
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
- Presses**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Boomer & Boschert Press Co., Montreal, Can.
Chambers Ltd., 152 Bay Street, Toronto.
- Pneumatic Chain Blocks**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Press Rolls**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Process Engineers Limited, Montreal, Can.
- Pusey & Jones Company**, Wilmington, Del.
Sherbrooke Mach. Co. Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulp Stones**
Lombard & Co., Boston, Mass.
Stancilffe Estates Co., Ltd., Darley Dale, England.
- Pump**
Bertrams Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Dillon Machine Co., Lawrence, Mass.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm., Co., Peterboro, Can.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Pusey & Jones Company, Wilmington, Del.
Smart-Turner Machine Co., Hamilton, Can.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Recording Gauges**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Recording Thermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- Refiners**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Rice, Barton & Falls Mach. & Iron Co., Worcester, Ma.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
- Rope, Cotton and Manila**
Jones and Glassco, St. Nicholas Building, Montreal
- Rope Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
William Hamilton Company, Ltd., Peterborough, Ont.
- Rosin Size**
Fox, Stockell & Co., London, Eng.
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Can.
- Rosin Size Boilers and Dissolvers**
Process Engineers, Ltd., Montreal, Can.
- Rotary Sulphur Furnaces**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Runways—Hand operated**
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
- Save-Alls**
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Can.
- Screen Plates**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Screens**
Bertrams Ltd., Edinburgh, Scotland.
Beznar, Albert, 299 Broadway, New York City
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Chambers Ltd., 152 Bay Street, Toronto.
Glens Falls Mach. Wks., Glens Falls, N.Y.
Harmon Machine Co., Watertown, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio
Jenckes Machine Co., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
Tippet Arthur P. & Co., Montreal, Can.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co. Ltd., Brantford, Can.
Westbye, P. P., Peterboro, Can.
- Shredders**
The Jeffrey Mfg. Co., Columbus, Ohio
- Slitters and Re-Winders**
Bertrams Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Chambers Ltd., 152 Bay Street, Toronto.
Moore & White Co., Philadelphia, Pa.
Pusey & Jones Company, Wilmington, Del.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Sprockets**
The Jeffrey Mfg. Co., Columbus, Ohio
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Split Pulleys—Wood and Steel**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Jeffrey Mfg. Co., Columbus, Ohio
The Waterous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Spiral Conveyor**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Straw Cutters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
- Straw Dusters**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.
- Strawboard Making Machines**
Bertrams Ltd., Edinburgh, Scotland.
Chambers Ltd., 152 Bay Street, Toronto.

MILL SUPPLIES---Continued

- team Regulator**
Pickles, W. F., Buckland, Conn.
- teel Barrels**
The Smart Turner Machine Co., Hamilton, Ont.
- teel Drums**
The Smart Turner Machine Co., Hamilton, Ont.
- tuff Chests**
The Watrous Engine Works Co., Limited Brantford, Ont.
- uction Couch**
Process Engineers Ltd., Montreal, Can.
- ulphite Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- ulphate Mill Equipment**
Carthage Machine Co., Carthage, N.Y.
Process Engineers Ltd., Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- ulphur**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- ulphur Burners**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- achometers (Hand and Stationary)**
Schaeffer & Budenberg, Brooklyn, N.Y.
- anks**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Peterboro, Can.
Jenckes Machine Co., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- hermometers**
Schaeffer & Budenberg, Brooklyn, N.Y.
- ransmission Machinery**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Limited, Toronto.
Dodge Mfg. Co., Ltd., Toronto and Montreal
Jones & Glasco, Montreal, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
William Hamilton Company, Ltd., Peterborough, Ont.
- Transmission Rope**
Dodge Mfg. Co., Ltd., Toronto and Montreal
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Travelling Cranes**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart Turner Machine Co., Ltd., Hamilton, Ont.
- Trolleys**
Blethen, Hugh R., New York, N.Y.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turher Machine Co., Ltd., Hamilton, Ont.
Morris, Herbert, Crane & Hoist Co., Toronto, Ont.
Northern Crane Works, Walkerville, Ont.
- Turbines**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc. New York, N.Y.
Voith, J. M., Wurttemberg Germany.
William Hamilton Company, Ltd., Peterborough, Ont.
- Water Wheels**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Allis-Chalmers, Ltd., Toronto, Ont.
Hamilton, Wm. Co., Ltd., Peterboro, Can.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.
- Wire Cloth for Paper Machines**
Chambers, Ltd., Toronto.
Christie, Geo., Ltd., Glasgow, Scotland,
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal. Que
Tippet, Arthur P. & Co., Montreal, Can.
Taylor, J. A., Montreal, Can.
United Wire Works, Ltd., Edinburgh, Scotland.
Westbye, P. P., Peterboro, Can.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste**
Hough, R., London, England.
- Wet Machines**
Bertrams Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Chambers Ltd., 182 Bay Street, Toronto.
Glens Falls Machine Works, Glens Falls, N.Y.
Hamilton, Wm. Co., Peterboro, Can.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Pusey & Jones Company, Wilmington, Del.
Sherbrooke Machinery Co., Sherbrooke, Can.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co. Ltd., Brantford Ont.
- Wood Preparing Machinery**
Beznar, Albert, 299 Broadway, New York City

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks, as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R., Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- Nesha Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co., (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.

Kraft

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Rlordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp and Paper Mills Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

- Eddy, The E. B. Co., Ltd., Hull, P. Q.
- Lincoln Paper Mills Co., Ltd., Merriton, Ont.
- Ford, J. & Co., Port Neuf.
- Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Owners' Board

- McArthur, Alex. & Co., Montreal

Printing

- Canada Paper Co., Montreal.

Selling

- Canada Paper Co., Ltd., Montreal.
- Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho

- Canada Paper Co., Ltd., Montreal
- Eddy Co., The E. B., Ltd., Hull, Que.
- Kinleith Paper Co., Ltd., St. Catharines, Ont.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.
- Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristle

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal & Toronto.

Building and Sheathing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials

Don Valley Paper Co., Ltd. Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co. Ltd., Canada Life Building, Montreal, Que.

Carpet Lining

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper

Lazier Paper Mills, Ltd., Belleville,
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope

Don Valley Paper Co., Ltd., Toronto.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills, Ltd., Vancouver, B.C.

Fibre

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes

Hinde and Dauch Paper Co. of Canada, Toronto

Flour Sacks

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal

Glazed

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.

Kraft

Brompton Pulp & Paper Co. Ltd., East Angus, Que.
Dominion Paper Co. Ltd., Montreal, Que.
Dryden Timber and Power Co. Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board

Walker, J. R. & Co., Montreal, Que.

News

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd. Grand Falls, New
foundland.
Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin Crabtree Mills, Quebec
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co. Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co. Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland and Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board

Eastern Paper Co. Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmillar, Ont.

Tag

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que

Wall Board

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde and Dauch Paper Co. of Canada, Toronto

Wood Board

Beaver Co. Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp Paper Co. Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.
Wilson, J. C., Ltd., 61 St. Alexander St., Montreal Que

Wrapping

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
See also Kraft.

Writing

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills Ltd., Beauport, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

Calgary, Alta.
Barber, Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Tees & Persse.

Edmonton, Alta.
Tees & Persse.
John Martin Paper Co., Ltd.

Saskatoon, Alta.
Tees & Persse.

Vancouver, B.C.
Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

Victoria, B.C.
Mitchell Bros., 8 Bastion.

Moose Jaw, Sask.
Tees & Persse.

Regina, Sask.
Tees & Persse.

Winnipeg, Man.
Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co. Ltd.

St. John, N.B.
Schofield Paper Co., Ltd., 26-30 Prince William.

Moncton, N.B.
Reid, F. P. & Co.

Halifax, N.S.
Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104 Windsor.
Allen, T. C. & Co.

New Glasgow, N.S.
MacGregor, R. & Co.

Kingston, Ont.
Hendry, J.A., 875 Princess.

Hamilton, Ont.
Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

Ottawa, Ont.
Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B., Co.

Port Arthur, Ont.
Tees & Persse.

Toronto, Ont.
Barber-Ellis Co., Ltd., 71 Wellington Street, W.
Brown Bros., Ltd., 51 Wellington Street, W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street
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Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

Montreal, Que.
Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 218 Lemoine
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. DeWolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.

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Andrews, F. H. & Son, 64 St. Paul.
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Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., Eng.
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York.
Scandinavian American Trading Co., New York, N.Y.

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ASSISTANT CHEMIST WANTED for Sulphate Pulp Mill—night work only. State experience and salary expected. Address Chemist, c.o. Pulp and Paper Magazine, 35-45 St. Alexander St., Montreal.

WANTED—Two first-class second hands and two first-class winder boys on cylinder machine making wood pulp board. Nothing but first-class, and steady, need apply. Address, "First-Class," c.o. Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal.

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124" fourdrinier, 110" cylinder, 78" cylinder.

These machines complete with Marshall drive.

One hydraulic press, two iron tub beaters, Marshall refining engine, one 12 x 14 triplex, one 10 x 12 triplex water pump. Two 8 x 10 triplex stuff pumps. Two 72" wet machines, four 10 plate open side screens, two 12 plate screens.

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POSITION WANTED as superintendent of paper and ground wood mill, making news, hanging, bag, manilas, butcher and tablet, have had over ten years' experience running mills on these grades of paper on large and fast machines. Apply Box 111, Pulp & Paper Magazine, 45 St. Alexander St., Montreal.

Alphabetical List of Advertisers

See Classified List on page 51

Unpaged advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construc- tion Co., Ltd.....	11
Ayers, Ltd.....	66

B

Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6

C

Caldwell, H. W. & Son Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Company, Ltd.	
Capital Wire Cloth Mfg. Co. Ltd.	7
Carthage Machine Co.....	
Chambers, Ltd.....	7
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	62
Churchill & Sim.....	
Crookes, Roberts & Co.....	13
Crossley T. L.....	65

D

Darling Bros., Ltd.....	13
DeCew, J. A.....	65
Dean & Son.....	
Dominion Belting Co.....	65
Dominion Pulp Woods Limits...	54
Dunlop, Wm. M.....	65

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	61
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.	11
J. Ford & Company.....	

G

Glens Falls Machine Works	
---------------------------	--

H

Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg Co.....	14
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H....	18
Johnson Chas.....	4
Jones, E. D. & Sons. Co.....	17
Jones & Glassco.....	6

K

Klipstein, A. & Co., Ltd.....	7
-------------------------------	---

L

Lauderburn, D. E.....	64
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	8

M

Marx, J & C.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15

N

National Paper Co.....	63
Northern Crane Works Ltd....	
Norwood Engineering Co. of Can Ltd	13

O

Ontario Pulp Wood Limits.....	67
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Prestons Digester Lining Co., Ltd.....	16
Process Engineers, Ltd.....	65
Provincial Paper Mills Co. Ltd....	61
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.	66
Rolland Paper Co. Ltd.....	66

S

Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works	17
Schaeffer & Budenberg Mfg. Co	6
Schlick, Leo.....	64
Scott, Ernest & Co.....	62
Sherbrooke Machinery Co., Ltd...	5
Smart Turner Machine Co.....	68
Smith, S Morgan Co.....	
Snell, Samuel Co.....	
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.	64

T

Taylor, J. A.....	62
Ticonderoga Machine Works....	
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

W

Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co, Ltd...	4
Waterous Engine Works Co., Ltd	
Westbye, P. P.....	
Wilson-Paterson Co.....	
Winn & Holland.....	

In chemical pulps, the situation is now more acute than it has been at any stage since the market commenced to rise. Paper manufacturers are buying closely and only for immediate needs. The realization seems to be general that there is little hope for a decline in prices for some time to come, and that "dickering" is absolutely useless. The shortage of stock is more pronounced than ever. All of the paper mills are operating at full capacity, and consuming as much raw stock as it is possible for them to use, which fact makes the need for pulp constantly more urgent. Imports from Scandinavia have fallen off remarkably. The figures for the month of December, 1915, show imports from Norway and Sweden, which equal about one-half normal. It is interesting to note that the imports of chemical pulp from Canada have been steadily increasing. Should the war continue for a year or more, after the new pulp mills, now under construction in the Dominion have been completed and are in operation, it is most likely that Canada's trade with the United States in pulp will have grown enormously. There is much speculation now as to what turn the market will take in May, after the opening of navigation on the Baltic Sea. During the present period, when the Swedes are unable to ship, they are undoubtedly accumulating large stocks on their docks, and in their warehouses. It has been estimated that because of England's prohibition of the importation of paper or paper making materials, Scandinavia will have considerable quantities of stock to dispose of. The question which is uppermost in the minds of pulp importers to-day is, "What will happen to this pulp? Will it be shipped to the United States, or will Continental Europe get the first option?" Bleached sulphite continues to be a great problem for paper makers. Prices have advanced until now many dealers are holding for 5½¢. for spot. Bleaching powder is still scarce, although the market has eased up to 9¢ for small lots for immediate shipments. Strong sulphite has been moving well, all new business being transacted at over 3¢. Krafts appear to be worse than ever. Large producers, who formerly sold a great deal of their production, are now consuming their entire output, which fact has made the shortage felt to a greater extent. It is, to-day, a serious proposition for some mills to secure sufficient kraft pulp to maintain continuity of operation. The future seems very precarious, with possibilities that krafts may reach the stage of a famine.

No one seems to know just what the actual quotations are in the rag market. Prices advance continuously, each dealer asking more than the other and creating such conditions which have never before been witnessed in the trade. Dealers are certain that there will be a decided shortage in rags, and have been speculating recklessly, buying up whatever they found available and holding everything for enormous prices. The demand for roofing stock to-day is unprecedented. Never before has roofing gone as high as 3½¢, yet to-day it is hard to obtain at that figure. So high has roofing gone, that packers find it profitable to throw their thirds and blues, sound whites and other such grades in with the roofing stock, making it necessary for the consumers of these grades to offer a premium which would warrant assortment. The English embargo on cotton and linen rags has made the situation here much more acute. New white shirt cuttings are quoted at prices as high as 9¢, and are not plentiful at this price. On all other grades of rags,

prices have been changing without cessation. Just how high the market will go, cannot be predicted, but it seems certain to reach a prohibitive stage. In many grades, the paper makers find themselves compelled to bid against the manufacturers of guncotton. Dealers state that a pronounced shortage of rags will be noticed soon. Imports of stock have been small, while prospects are very poor. It is understood that France has placed an embargo on rags, following England's action. If this is so, then it is not likely that our imports, in the future, will be of any consequence. Bagging has felt the influence of the great demand for roofing. Practically all grades are scarce. Gunny is quoted at 3¼¢ and higher. Bright bagging is going at 3¢; sound bagging is held for as much as 2¾¢, while mixed bagging is selling at over 2¢. Manila rope is active, though scarce with quotations at 4¢ and higher. The available supplies of rope have been constantly decreasing, while the imports have not added much to our resources.

Remarkable activity characterizes the old waste paper market at the present time. Practically every grade of stock is in good demand and is advancing. Not only are the board manufacturers and the other regular consumers of waste papers busy and buying heavily, but the makers of rag and sulphite papers have practically besieged the market in search of substitutes for rags and pulps. For krafts, there is an unusual demand. However, there is little to be had. This grade is now at about 3¢. Hard white shavings, soft white shavings and book stock are exceptionally active. Hard whites are going at more than 3½¢, while soft whites are already over 3¢. The English embargo on paper stock has, of course, tended to precipitate conditions here, especially in book and ledger stock. From present appearances, this market will surely continue to go higher for some time. Just now, there are in the East many of the Western buyers, who have never before had occasion to come into the market.

Conditions in the paper market are well nigh chaotic. Prices on every kind of paper are practically all withdrawn, and jobbers find it difficult to get stock. Mills throughout the country are rushing at capacity, with orders ahead. The trade, in general, seems to have been seized with fear, and a movement to "cover" for the future is now in progress. This has actually taken the form of a wild and reckless manner of buying. In other words, the matter of price is not considered, the only question being, "who will fill my order?" Many concerns originally advanced their quotations to ward off the flood of business, but just as long as a mill was willing to take an order, the buyer manifested a desire to close the deal. Just now, many large manufacturers have had to withdraw from the market entirely. From present appearances, prices will continue to soar for some time. It is possible that many mills may find it difficult or impossible to get raw materials, and be compelled to shut down. The rag situation is causing much worry among writing paper manufacturers. Already one of the large factors in this line announced that several of its mills may have to be closed on account of inability to secure rags.

News print is very active, with prices advancing. Considerable talk has been current regarding the possible shortage of news. The usual surplus of stock has disappeared some time ago, and it has been necessary for manufacturers to help each other in taking

care of contracts. Krafts are without doubt suffering most of all during this extraordinary period. No kraft paper has been imported for some time, so that the domestic makers are bearing the burden of the entire demand. These concerns are busy, very few, if any, taking added business at present. The scarcity of kraft pulp makes a famine in this paper very feasible. Kraft papers are soaring, present figures being 6c and higher. Manilas and fibres are in good demand, few mills being in a position to take orders for either. Tissues are practically unobtainable. As high as 60c has been reported for pure white tissue. Paper bags have been overflowed, the factories finding it impossible to keep pace with the demand. Book papers are constantly going higher. Boards are quoted at exorbitant prices, without any specification for delivery.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$22.00 to \$24.00.
Ground Wood No. 2, \$18.00 to \$22.00.
Unbleached Sulphite, dom., 2.50c to 2.85c, delivered.
Easy bleaching impt., 3 to 3½c, ex-dock, N.Y.
Bleached Sulphate, impt., 4c, ex-dock, N.Y.
Bleached Sulphite, impt., 5 to 6c, ex-dock, N.Y.
Unbleached Sulphite, impt., 3.10 to 3.25c, ex-dock,

New York.

Kraft Pulp, impt., 3¼ to 3¾c.

Paper.

News, Rolls, transient business, \$2.10 to \$2.25.
News, Sheets, \$2.30 to \$2.45, f.o.b.
News, Rolls, contract renewals, \$2.10 to \$2.20, f.o.b.
News, side runs, \$2.00 to \$2.15, f.o.b.
Book papers, car lots, S. & S. C., \$50 to \$55 f.o.b.
Writing paper, extra superfine, 14c. to 17c., del. east of Miss. River.
Writing paper, superfine, 13 to 15c, del. east Miss. R.
Writing paper, No. 1 fine, 10c, del. east Miss. River.
Writing paper, No. 2, fine, 9½c, del. east Miss. River.
Writing paper, engine sized, 7½ to 11c, east Miss. R.
Bond paper, 6½c to 24c, delivered east of Miss. R.
Ledger paper, 6½c to 25c, delivered east of Miss. R.
Linen paper, 9c to 18c, delivered east of Miss River.
Manila jute, 5c, delivered.
Manila, wood, 4½c, delivered.
Kraft No. 1 (dom.), 6½c, f.o.b., New York.
Kraft, No. 2 (dom.) 5c, f.o.b., New York.
Kraft, imported, 6½c, ex-dock, New York.
Boxboards, news, \$34 to \$37 per ton, delivered.
Wood pulp board, \$42 to \$45 per ton, delivered.
Boxboards, straw, \$32.00 per ton, delivered.
Boxboards, chip, \$30 per ton delivered.
Tissue, fourdrinier, 60c, f.o.b., New York.
Tissue, white, cylinder, 65c, f.o.b., New York.

PAPER EXPORTS INCREASING.

Canada is making many records these days; paper exports being included in the list. In November Canada exported \$1,753,000 worth of printing paper—a new high record in the history of the industry. Of the total exports the United States took \$1,425,000 worth.

That Australia should have taken \$170,745 and New Zealand \$119,759 is highly remarkable in face of the almost unprecedented shortage of ocean tonnage. In eight months of the current fiscal year Canadian exports to Australia, of printing paper alone, totalled \$510,489. New Zealand has taken \$315,032 in the same period, and Great Britain \$131,832. Paper exports within the Empire have never reached such large proportions for the first eight months.

Canadian export business would receive a fresh stimulus if the Scandinavian countries enacted an embargo on pulp and paper exports, as has recently been talked about.

The high levels of our pulp exports continue to be well maintained, according to the latest returns. October's figures were the best for any one month in the present year, but the November return is only slightly less, in the aggregate. Great Britain is taking a small amount of both the chemically prepared and the mechanically ground pulp, but the United States is Canada's really dependable customer.

The following table shows the exportation of newsprint paper for the current fiscal year, and since April, 1913. The figures for March do not count in the comparison owing to the practice of the Government of including in that month shipments made during that month, but not reported until the next month, which during the rest of the year are credited to the month in which they are reported.

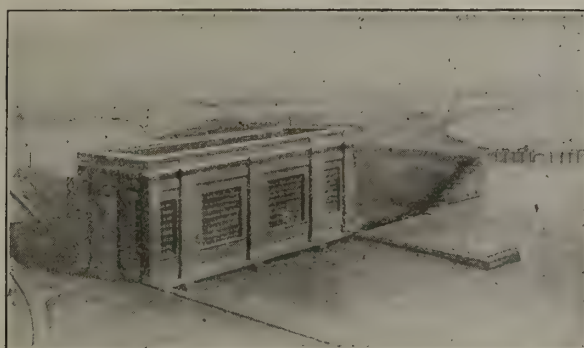
Month	Chemical pulp.	Mechanical pulp.	Newsprint.
1913.			
April	\$ 202,110	\$ 143,126	\$ 596,554
May	201,276	234,494	810,575
June	121,199	173,445	874,284
July	218,302	251,284	793,898
August	203,542	276,171	889,645
September	232,835	399,057	941,986
October	233,159	467,878	976,028
November	273,278	357,688	1,037,207
December	311,251	450,030	1,057,817
1914.			
January	257,194	265,750	928,223
February	254,250	174,522	1,049,778
March	414,687	259,296	1,432,850
April	258,497	164,494	836,110
May	386,909	189,792	1,092,172
June	347,606	270,990	1,135,283
July	358,170	604,869	1,149,569
August	382,225	169,942	1,108,285
September	489,741	566,217	1,247,780
October	484,575	935,226	1,405,431
November	321,128	455,280	1,064,634
December	428,164	457,833	1,361,155
1915.			
January	393,778	239,758	1,085,019
February	358,983	263,948	1,082,032
March	596,846	146,190	1,524,192
April	355,843	120,437	970,445
May	406,568	146,844	1,341,243
June	429,489	131,982	1,345,444
July	442,976	468,385	1,441,647
August	551,693	157,612	1,564,510
September	471,447	435,447	1,207,460
October	612,920	526,444	1,563,757
November	597,883	388,894	1,753,013
8 mos. current			
fiscal year . . .	3,868,926	1,460,707	11,187,519



Barber Paper Mill, Georgetown, Ont.



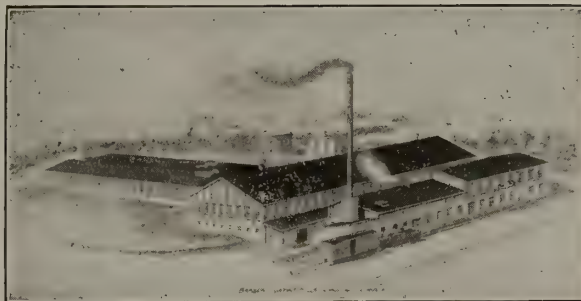
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Montrose Power Plant, Merritton, Ont.



St. Lawrence Paper Mill, Mille Roches, Ont.



Barber Coating Mill, Georgetown, Ont.

Provincial Paper Mills Co. LIMITED

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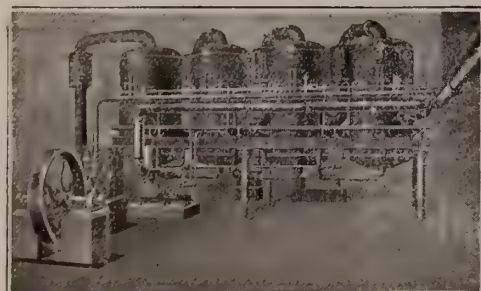
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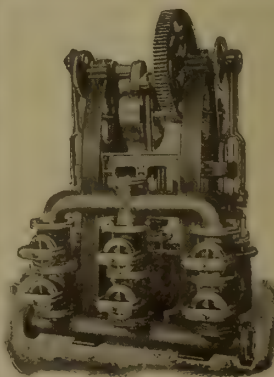


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It also retains the proper amount of moisture in the paper thus eliminating the breaks at the calenders.

This regulator gives you a higher and more uniform finished paper with less calendering.

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Special Features

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THE SERIOUS CONDITION IN THE
SUPPLIES OF RAGS AND WASTE
PAPERS, AND THE STEPS BE-
ING TAKEN TO REMEDY
THE SITUATION.

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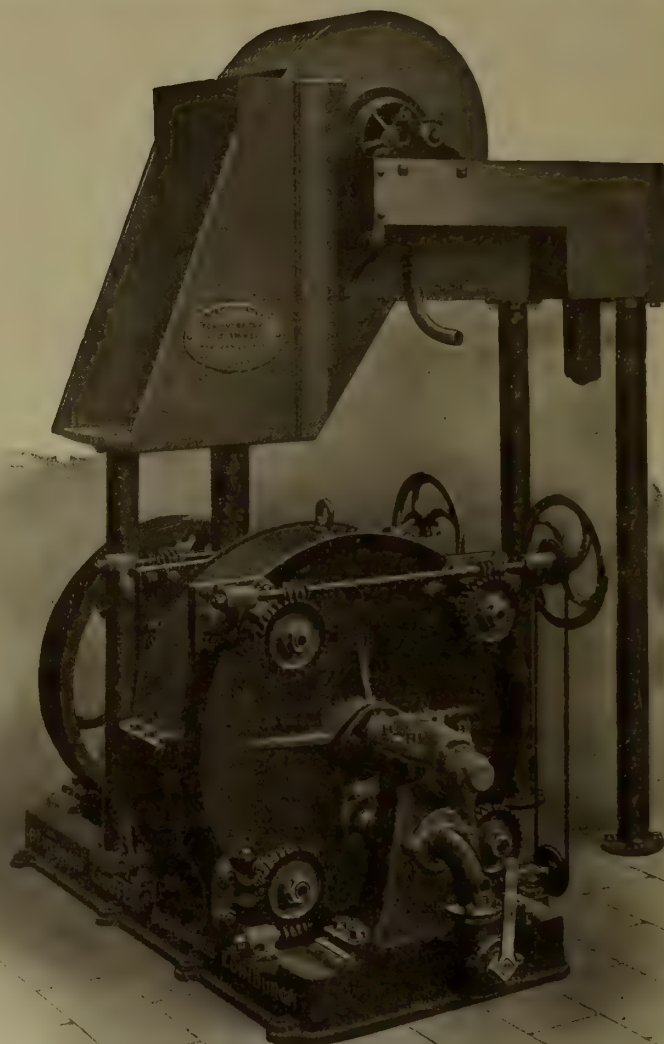
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51"

Bertrams Limited



MILNE'S PATENT REFINING ENGINE
(WITH LISTER'S PATENT CONCENTRATOR)
Code Word "REFIN CONCE"

THE ACTION OF THIS REFINER IS PERFECT
owing to the fact that pulp will not pass through the second set of Bars
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BEFORE THEY CAN PASS OUTWARDS

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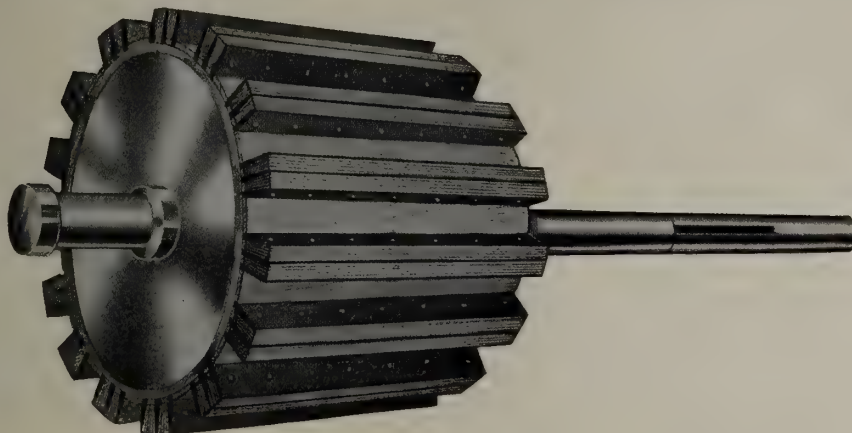
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Pop test increased.

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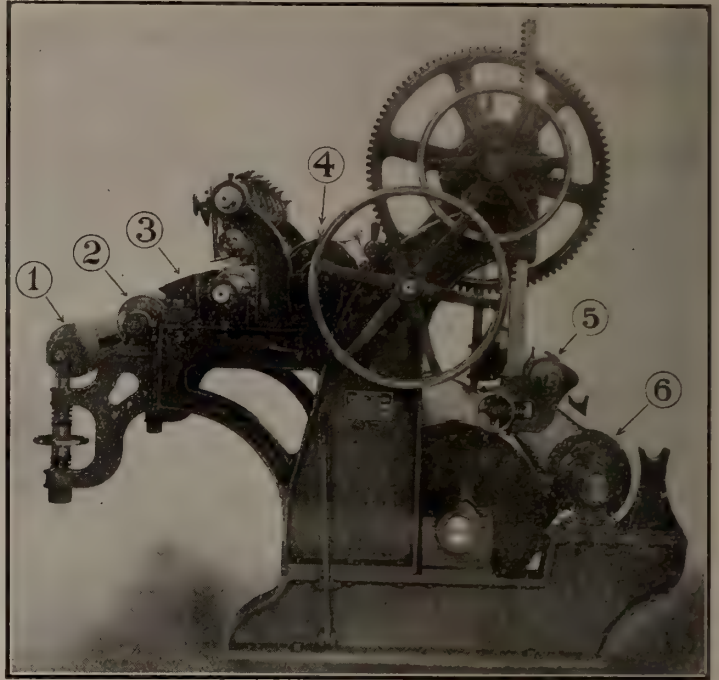
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OPENSIDE FLAT SCREENS

Unexcelled for screening **fine** stock effectively.

Notice the open end stands. Did you ever try to take the shaft out of a closed end screen? Some job.

Other Improvements :-

Dovetailed cypress vats

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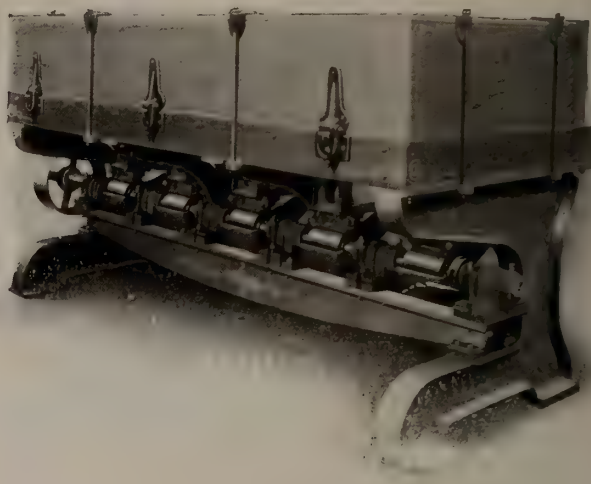
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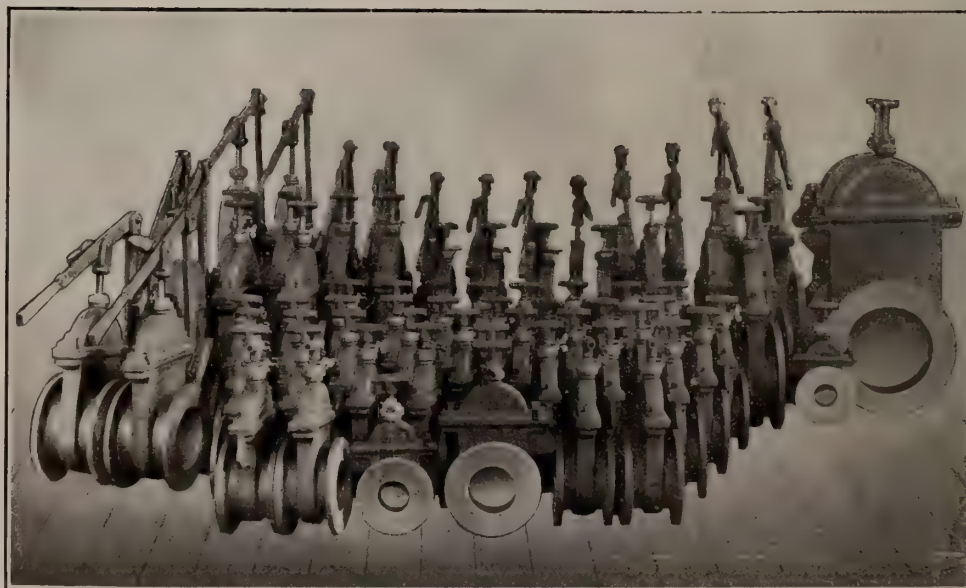


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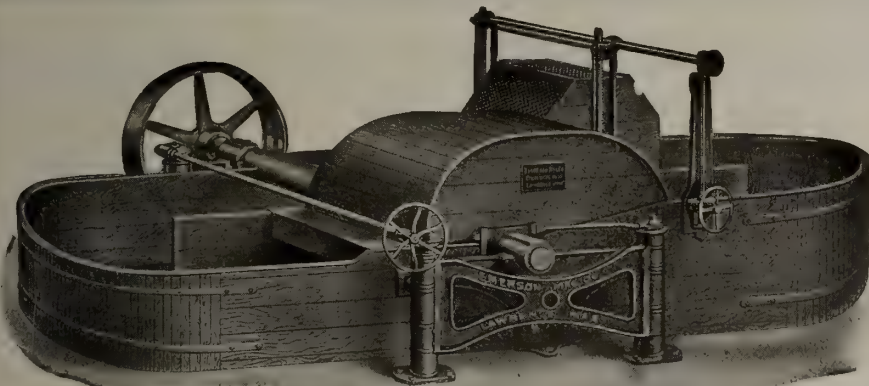
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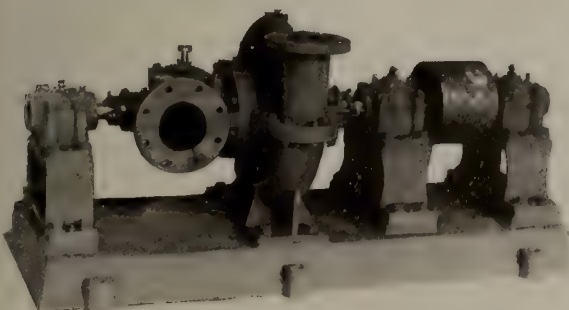
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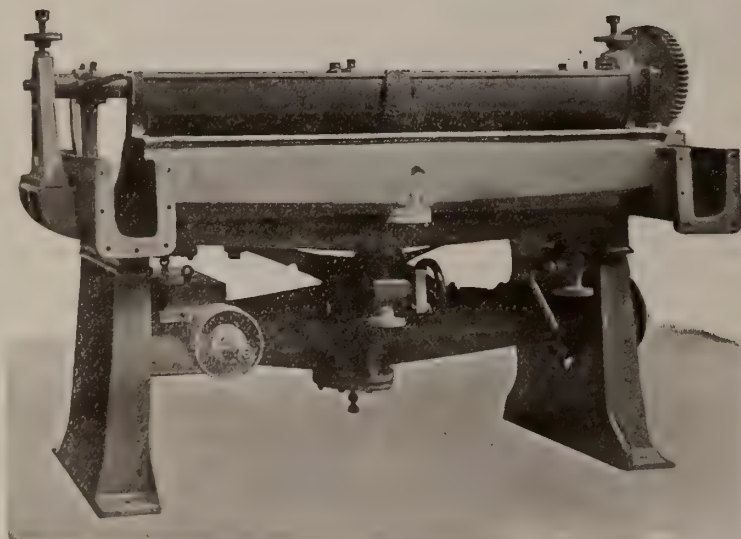
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It will pay you to Investigate
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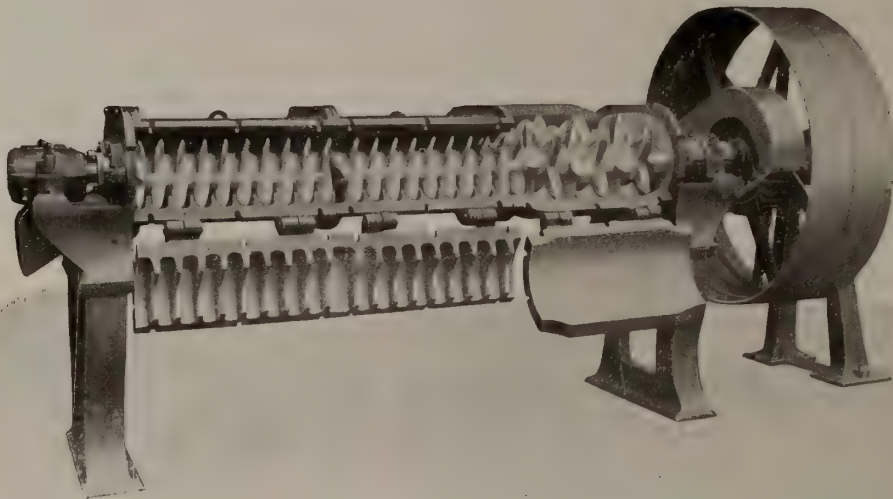


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MADE IN U. S. A. AND CANADA



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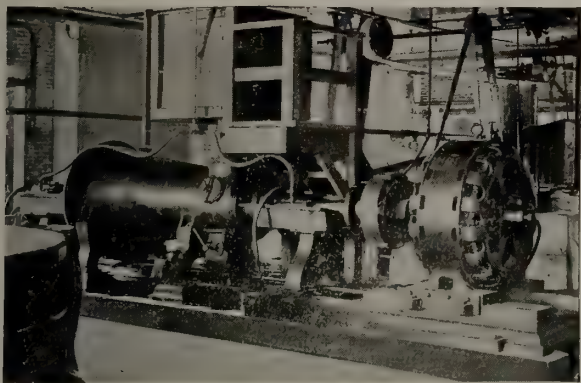
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Strong open Gray Felts for high speed news machines and Gray Pulp Felts for Ground Wood and Sulphite.
Lowest cost per ton of product. Very heavy Jackets for long rolls of large diameter.



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The only weight on the Jordan bearings is the weight of the plug. Therefore the Jordan fillings last longer, resulting in less friction and lower maintenance cost.

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High Speed
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STEELS
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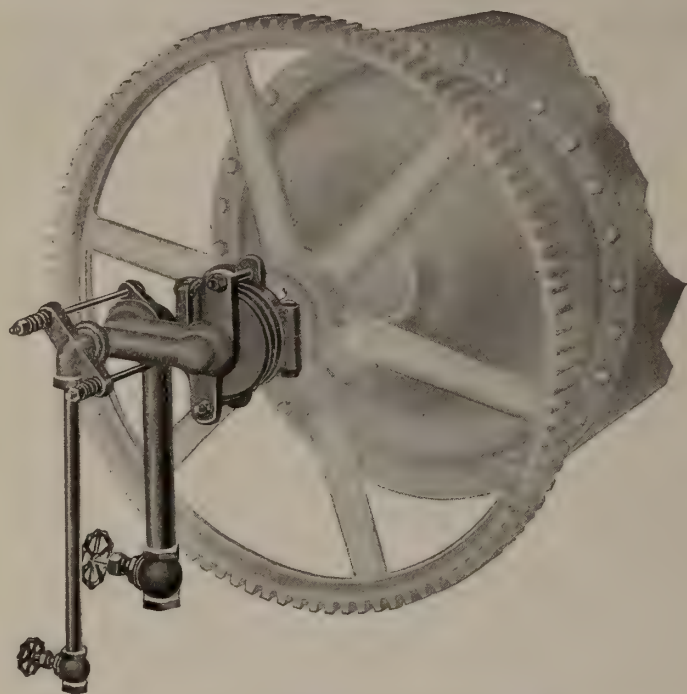
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The latest improved and most up-to-date
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No Packing required—all metal joints

Self-adjustable. Takes care of expansion and contraction, also irregularity of piping. A positive safety valve; pressure in dryers cannot exceed a determined amount

Over 2,000 sold in the past three years

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LEADING BUILDERS OF PAPER MILL MACHINERY

CHECK UP on your OPERATING COSTS

You can't get away from certain fixed charges in your mill—but the cost of handling your materials can be materially lessened by installing.

—JEFFREY—

Elevators & Conveyers

We have proved this to many of the largest Pulp and Paper Mills in America, and can save you money if you will give us the opportunity to solve your problem.

A few of the equipments we have furnished are pictured here—Bulletin No. 98-5 has many others, and probably contains the very outfit needed for your requirements. Ask for copy.

The Jeffrey Manufacturing Company

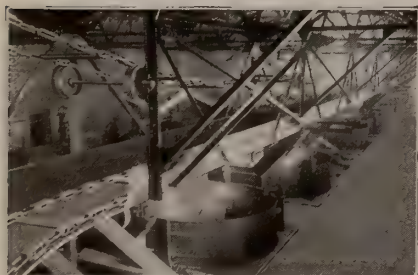
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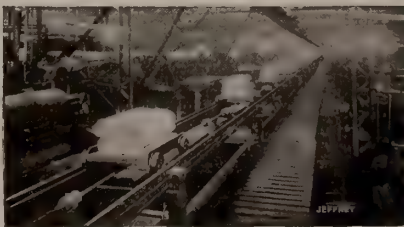
A Chip Elevator with flap valves in double spout leading to parallel Belt Conveyers.



Section of Jeffrey Newspaper Elevator Conveyor, mounted on double strands of Roller Chain.



Steel Chain Conveyor Handling Cooked Straw Over Beaters in Paper and Board Mill.



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and JACKETS
For Pulp and Paper Mills

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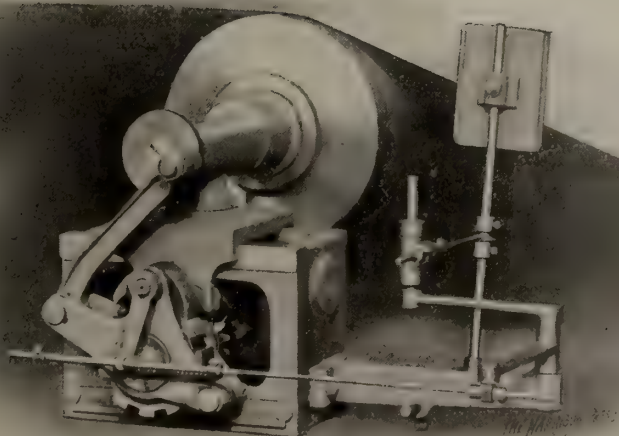
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Single Fender Automatic Wire Guide



THE MOORE & WHITE CO.

PHILADELPHIA

U.S.A.

BULLETIN UPON REQUEST

Our latest patented Wire Guide is illustrated herewith. This type was originally designed for high-speed, fast-running news machines. We have quite a number in operation on machines having wires 200 inches in width, operating at speeds over 600 feet per minute. We have decided to build this type of Wire Guide in a smaller size for machines having wires under 120".

We highly recommend this type of Wire Guide for Fourdrinier Paper Machines making any kind of paper. We guarantee that it will give longer life to your wires than any other Guide on the market, and can be operated at the lowest possible upkeep expense.

You will note from the illustration that the pawl when engaged in teeth of ratchet wheel, has a full bearing surface, eliminating wear, also eliminates the purchase of many expensive ratchet wheels and pawls used on other types of Wire Guides.

When the wire is running in the centre of machine the pawl cannot transmit any motion to the guide roll. Should the wire travel to the other side of the machine, the positive and quick action of the pawl would immediately cause the Wire Guide to properly align the wire.

The Single Fender feature on these Guides increases the life of the wires considerably, as only a very slight contact between the fender and wire is sufficient to operate the Wire Guide when necessary.

The single fender Guide is more convenient, especially when putting on new wires. It is very desirable for wide paper machines.

BUILT IN TWO SIZES: Size "A" for machines up to 120". Size "B" for machines 120" to 200" and over.

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The RICEBARTON Smoothing Press is designed for perfect work :--- it gives results. Why not install the best? Write for particulars.

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Horizontal Stuff Chests	
Vertical Stuff Chests	

Our Combination Emptying Valve and Dam and the Wallace-Masson Hydraulic Beater Roll Regulator, both being covered by Canadian Patents controlled by us, can be obtained from the Canadian Boomer and Boschert Press Co., Limited, 18 Tansley Street, Montreal, P.Q., Canada, they now being the sole manufacturers of the above articles for the Canadian requirements. Write them or us for full particulars and prices

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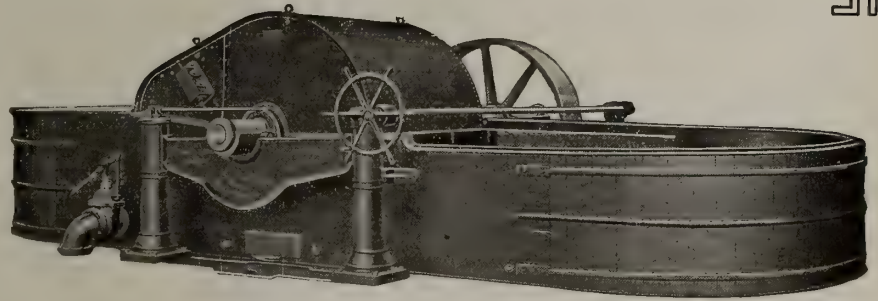
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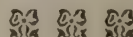
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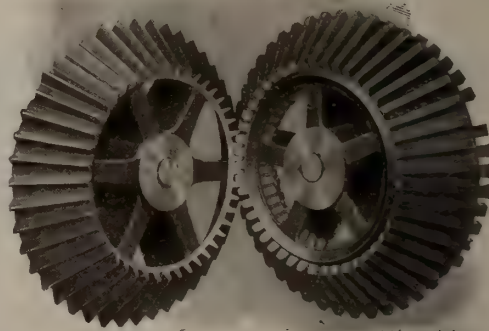
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VOL. XIII.

MONTREAL, APRIL 1, 1916

No. 7

Technical Trained Workmen

Canada possesses the original Doubting Thomas in the person of the Honorable T. W. Crothers, Minister of Labor! A few weeks ago he made a speech in parliament in which he "doubted very much if the Allies would win the war" Now he "doubts very much the wisdom of doing anything for technical education."

A resolution introduced into parliament a few days ago by the Honorable Rodolphe Lemieux and supported by both Conservatives and Liberals urged upon the Government the advisability of doing something to provide work for disabled soldiers and also undertake a scheme to make our Canadian workmen better fitted to compete with the workmen of other countries. It was pointed out that as a result of the world war, regular channels of trade were being unset, markets disarranged, and that the present armed conflict would doubtless be followed by a commercial and industrial warfare. The advocates of the scheme called attention to the valuable report prepared a few days ago by Dr. J. W. Robertson and his associates and contended that the investigations made by these men furnished the basis for an excellent technical education scheme for Canada. The Commission in question visited every country in Europe and compiled a vast amount of data relating to the training of workmen.

Despite the fact that Mr. Crothers was forced to admit that the workmen of England, Belgium, France, Germany and other European countries were better trained than ours, and consequently better able to compete in the markets of the world, the Doubting Thomas at the head of our Labor Department could not see his

way clear to make a move in the matter. It is to be hoped that the business men throughout the country will not rest content with the attitude of the Dominion Government, but will continue to employ every possible means to increase the efficiency of their workmen. It is not necessary to remind pulp and paper men of the advantages which accrue from having skilled workmen in their employ. The more of these we have, the better able we will be to compete with the workmen of other countries.

Rags!

The Old Rag Man is coming into his own! In the olden days we were accustomed to throw bricks and epithets at the more or less unwelcome individual who went up and down our lanes and streets calling "Rags, bones, bottles!" With prohibition sweeping over the country, the bottle business looks as if it were nearing an end, and the up-to-date rag man will soon have to drop that from his vocabulary. However, the rag part of the slogan is gaining in popularity owing to the war, and the way it has upset our regular channels of trade, including the supply of old rags.

In the United States the rag situation has become so acute that the Government has offered its services in an effort to lessen the shortage. Posters have been put up in the post offices throughout the land, while advertisements are appearing in the press calling upon housewives to save their old rags, and thereby the life of the nation. It is no longer popular nor profitable to burn your old rags and clippings, so the modern up-to-date housewife is instructed to save them and sell them to the enterprising rag man, whose dulcet

tones heard in the back lanes of the land are now taking on a new meaning.

The war is teaching us many things, among others that thrift never held a very large place in the economic and industrial life of the people of this continent. As a nation, we waste more than would keep half a dozen ordinary countries. If we can arouse the public conscience that they will save not only their old rags, but many other articles which now go to waste, much good will be accomplished. One of the most wasteful industries in the country is associated with the lumbering industry. Perhaps a new era is dawning when there will be no waste, and even rags will have their place in the economic life of the people. At present from 75 to 90 per cent of all old rags are burned in the homes of the people or in civic incinerators. An effort is being made to save these for paper makers.

Organize for an Export Trade

There are many organizations at work endeavoring to increase the country's trade following the cessation of hostilities. Some time ago the Export Association of Canada was formed, having for its object the building up of an export business, especially the replacing of German made goods in foreign countries by "Made-in-Canada" articles. The toy makers of Canada are now organizing, and hope to be able to substitute Made-in-Canada toys for the Made-in-Germany articles which we have been accustomed to buy for our children from time immemorial. Other special bodies are organizing with the same object in view, and are receiving the utmost support from the Government.

At the risk of becoming tedious, the Pulp and Paper Magazine again calls attention to the opportunities awaiting the wide-awake paper makers of Canada in foreign fields. The world's markets have become badly disorganized as a result of the war. The Swedish embargo has cut off what has heretofore been the greatest supply centre for pulp. Evidence is accumulating that Great Britain and the other parts of the Empire are desirous of having the closest possible trade relations. It seems inconceivable to think that an Empire, the various parts of which united to fight the common foe, will not unite in closer trade relations at the conclusion of war. There is therefore not only Great Britain and the other parts of the Empire with which we can increase our exports of pulp and paper, but the many neutral countries which were heretofore more or less dependent upon Germany, Austria and Scandinavian countries for their supplies. When all other industries are organizing to capture an export trade, the pulp and paper men of Canada should do likewise. It is an opportunity which may not come again for generations.

New Markets Being Found

New markets are being found for Canada's forest products. Mr. R. H. MacMillan, who has been acting as Special Trade Commissioner for the Department of Trade and Commerce, has just notified the authorities of Ottawa that there is a big demand in India for Douglas Fir, newsprint, and sulphite pulp, bleached and unbleached. He states that all the newsprint which was used in India before the war came from Europe, while the pulp was largely supplied by the Scandinavian countries. Mr. MacMillan has visited several outlying parts of the British Empire, and has found a good demand wherever he went. As the Canadian Pulp and Paper Association is well organized, and is keenly alive to the opportunities awaiting them in foreign fields, there is every likelihood of many of our manufacturers taking advantage of the reports presented by Mr. MacMillan.

In connection with lumber, British Columbia, especially, has been carrying on a very active campaign in search of new markets. The fact that India requires Douglas Fir will be hailed with a great deal of satisfaction by British Columbia, and doubtless efforts made to supply the demand. Altogether the investigations carried on by Canada's Commissioner are likely to be productive of very satisfactory results.

The Honour Roll

The Pulp and Paper Magazine points with a good deal of pride to the three pages of names constituting its Honour Roll. That upwards of six hundred men have enlisted from a single industry is a very good indication of the type of men constituting the rank and file of its employees.

The fight is not only one between Great Britain and her Allies and the Teutons, but is broader than that, and has resolved itself into a conflict between humanity and barbarism. Unless Prussian militarism be crushed, then every nation in the world will be forced to constitute itself an armed camp in self defense. Better far that we should endure militarism for a year or two until the Huns are crushed, than to submit to it for a life time. The end of the war is far from being in sight, so we trust that many more men from the pulp and paper mills of the country will see their way clear to do their bit for King and Country.

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R. MAILO.
J. RANDO.
F. SALVATORE.
F. FRANCISCO.
M. STOUULO.
D. CLAREY.
A. BRADLEY.
U. ALBERTO.

St. Croix Lumber Co.

FRED BOUCHY.
CLIFFORD WHEADON.
BERT McMULLEN.

Trent River Paper Company, Ltd.

ROSS R. HERMAN.

St. Maurice Paper Co., Limited.

NELSON BOUCHER.

Nelson Boucher, St. Maurice Paper Co

Toronto Paper Manufacturing Co.,
Limited.

ALLEN FORBES.
JOHN GIRARD.
MIKE COLBORNE.
Z MARTIN.

Victoria Paper and Twine Company.

A. S. HASSALL.
H. C. DUNNING.
Col.-Sergt. HAROLD DUNN.

Wayagamack Pulp and Paper Com-
pany, Limited, Three Rivers,
Que.

R. A. GILLIS.
J. ADAMS.
F. BARTON SMITH.
R. J. HAMILTON.
JACK B. ADAMS.
ARMAND BARIBEAU.
ANTONIO BIRON.
HERMAN BOBERG.
DONAT CHAMPAGNE.
GEORGES CRETE.
JAMES FOTHERINGHAM.
R. A. GILLIS.
RICHARD J. HAMILTON.
WILLIE HOULE.
A. LEBRUN.
WM. McQUADE.
HARRY PRECIOUS.
RICHARD SCOTT.
E. STETTESTROM.
F. BARTON SMITH.
EMILE TREMBLAY.
J. A. WALKER.
NILS AF ZELLAN.

Pulp and Paper Magazine.

LIEUT. W. S. MORTON.
LIEUT. G. K. HANNAH.
SERGT. W. H. GORDON.
PTE. R. J. LANE.
PTE. S. BATES.
PTE. F. HOWDEN.
PTE. M. WAXMAN.

Industrial Research To-day

(Specially Written for Pulp and Paper Magazine.)

"Research is a practical subject. It is no dream or visionary fad. If Canadian Manufacturers are to succeed, this cannot be done by artificial bolstering up, or sleight of hand, or industrial cornering, or anything else except plain, intelligent hard work. Success may be obtained by Governments—Dominion, Local, and Municipal co-operating heartily in advancing Technical Schools, and it can be greatly assisted by the shrewd but interested support in co-operative plans of the Canadian Manufacturers."

So spoke Rev. Dr. Geo. Bryce, of Winnipeg, a member of the Royal Commission on Industrial Training and Technical Education, in a stirring conclusion to an address before the Canadian (now Royal Canadian) Institute in Toronto, in February 1912. Nothing could point the duties of Canadians more clearly. And yet, what are we to say of the fact that on the 27th of March, of this year, less than a week before the issue of this number of Pulp and Paper Magazine, a motion by the Hon. Rudolphe Lemieux, in the House of Commons:—

"That in the opinion of this House, measures should be taken at the earliest opportunity to give affect to the Report on Technical Education," afterwards amended by the mover to read—"That in the opinion of this House measures should be taken at the earliest opportunity to promote, in co-operation with the provinces, Technical Education and manual training," was withdrawn upon the statement of the Minister of Public Works that "We have admitted the principle that the Dominion Government should help in the matter of Technical Education, and I think my hon. friend should be satisfied with that," and Technical Education, so far as the Federal Government is concerned gets a hoist of a few months at least. And the people of Canada are left to trust, with the Hon. Mr. Lemieux that "that day is not far distant when this Government in co-operation with the various Provincial Governments, will give Technical Education and manual training every necessary assistance."

Of course, it is true that Canada is in the midst of a life-and-death struggle, and manhood, industry and finance are all being strained. There is the statement of a responsible minister that "the Government recognizes the principle of assistance in the matter of Technical Education. We are giving the question to-day the most careful consideration, and under normal conditions we would be coming down to this House with a recommendation to assist Technical Education in the various Provinces . . . we would at the earliest possible moment lend such assistance as we can in the public interest to the furtherance of the cause of Technical Education in the provinces of Canada," but we must bear in mind also that the close of the war will bring to our shores thousands of men who must be placed on farms, or re-educated along lines from which the physical losses many will have suffered will not preclude them. A bricklayer who has lost an arm will have to be taught time-keeping, stock-taking or some such other work. A machinist who can no longer stand before a lathe, by reason of the loss of a leg, will need training in shoemaking, tailoring or some other trade.

These necessities, while the most pressing from the standpoint of the nation's duty to its soldiers, are no greater than those which concern the country's economic development. There will be a great fight for world trade after the war. There will be extraordinary demands laid upon our industrial machinery, for, as Viscount Haldane said in Liverpool recently, the Empire has more reason to fear conquest in peace time, which the Germans were constructing before the war, than of any of their 42 centimetre guns. This engine was educational, and Viscount Haldane declared it to be the most modern form of continuation work, which was spread over a large part of Germany. It consisted of school work for imparting trade skill and general knowledge. Germany, in short has begun to train the youth of the land in special skilled trades to out-distance competitors throughout the world.

Mr. Lynch, speaking in the British House of Commons on January 10th, said:

"I cannot but think that unless the deep foundations are laid of commercial prosperity in the way of high scientific education, and of its derivative, technical education, then simply to juggle with tariffs, or even to devise details for improving trade, places the expert somewhat in the same position as the physician who, having to deal with a disease, occupies himself solely with the symptoms, instead of investigating the profounder causes of the malady."

Surely, Canada needs to do much along the lines of industrial research and Technical Education. And yet the mildest kind of motion working to the development of Technical Education cannot get the assent of the Dominion House. The reason assigned is "difference of opinion which appears to exist even in this House, and the sensitive manner in which the question of education is considered by the various provinces." It developed in the course of the debate in the House, that few, if any, of the Provincial Premiers had read the report of the Royal Commission on Industrial Training and Technical Education, which cost about \$120,000, and that with one exception, no definite opinion as to the value of the inquiry or the lines which should be taken to promote Technical Education had been received for any of the provinces.

The Deputy Minister of Labor wrote at least twice to most of the Provincial Governments, and up to a week ago had received a reply from Nova Scotia only. Those who are familiar with the excellent work being done by the Province, and with the enlightened views of Prof. F. H. Sexton will not wonder that some response was shown in that quarter. So far as co-operation with the Dominion Government is concerned, the recent debate in the House of Commons showed that Provincial Governments are either sound asleep, or pursuing a policy of aloofness of which the wisdom at this critical time, is, to say the least, questionable.

Fortunately the Association for the Advancement of Technical Education is not by any means in the same position, nor is the Royal Canadian Institute. The latter institution has taken hold of the problem of Industrial Research, and is endeavoring to establish a "Bureau of Scientific and Industrial Research and School of Specific Industries." The President, Mr.

Frank Arnoldi, K.C., in his address to the Institute in 1915 outlined the sphere of the Bureau as follows:

"The Commercial world and its industries necessarily require the advantage of scientific and industrial research as the universities give it for educational purposes and the advancement of the public interests in every way. A general scheme for scientific and industrial research utilizing the universities, a Government Commission backing up the universities, may well be called upon to undertake. In this field the work of the Bureau will largely extend, but the commercial world and its industries require in addition something of a different kind. The individual factors, the corporations, the partnerships, the individuals carrying on manufacturers and enterprises require scientific and industrial research in their individual spheres and for their individual benefit. This work to a large extent the universities may find means to do. The section of the best instrumentality; whether in a university or in the Bureau itself, or otherwise, for any particular investigation contemplated, necessarily calls for a complete body, capable and organized, to put forth the necessary propaganda and to provide a selecting body with machinery adapted for the negotiation with the applicant, the proper choice of the investigator, and the making of the agreement for a Fellowship, or other form of endowment of the investigation between the applicant on one hand and the proposed investigator on the other. It is self-evident that the instructional functions of the universities and their trust for the general public prevent their taking upon them these functions of the Bureau of Scientific and Industrial Research, which, however, in its investigations, will necessarily depend largely upon and ask for the assistance of the universities wherever it is available."

The Officers of the Bureau announce that the work will be carried on along the lines of the Mellon Institute, Pittsburg, and quote the following prospectus, "Service to Industry," issued by that institution as an indication of what might be done in Canada.

"The Object of the Institute.

"Wherever raw materials are secured or wherever they are made into goods to supply the many wants of man, there are unsolved, exasperating, vitally important manufacturing problems — problems which may have to do either with difficulties in manufacture, with the utilization of wastes, with the bettering and cheapening of products manufactured, or with the discovery of new and useful products.

"To be of service in solving these problems, by bringing the wealth of contemporary science to bear upon them, the Mellon Institute of Industrial Research was founded. It represents an alliance between learning and industry, which has been found to be a most happy and successful one.

"The alliance takes the form of what is known as the Industrial Fellowship System. According to this system, a company, an association, or an individual may contribute a definite sum of money to the Institute for a period of one or more years. This money, with the exception of a very small sum for the purchase, if necessary, of very special apparatus, is used by the Institute to pay the salary of the man or men who work on a particular problem, the solution of which is of interest to the donor. The Institute houses the research, furnishes it with all ordinary apparatus and supplies, affords library and consultative facilities, gives careful direction to the progress of the work, and offers an atmosphere sympathetic to research. The re-

search is surrounded with the necessary secrecy, and any and all results obtained during the course of the fellowship belong exclusively to the donor.

"The History of the Institute.

"The idea of this unique system of the service of science to industry was first thought out by the late Robert Duncan, the first Director of the Mellon Institute, after prolonged visits in Europe during 1904 and 1907.

"Through his visits to the workshops, laboratories and universities of most of the principal countries of Europe, and through his talks with industrialists, Dr. Duncan became impressed with the spirit of co-operation which existed abroad between industry and learning, which made for the advancement of both. The Industrial Fellowship System occurred to him as a sane, practical scheme of relationship between industry and learning, which would promote the efficiency of American industry.

"Dr. Duncan established, through a grant from a manufacturer of launderers' supplies, the first industrial fellowship at the University of Kansas in 1907. In 1911, Dr. Duncan was called to the University of Pittsburgh to inaugurate the system in the Department of Industrial Research. In March, 1913, Messrs. Andrew William Mellon and Richard Beatty Mellon, brothers and bankers of Pittsburgh, impressed by the evident practical value of the system and by the potential service it should render to American industry, established it on a permanent basis through the gift of over half a million dollars.

"On February 18th, 1914, Dr. Duncan died. He was succeeded by Dr. Raymond F. Bacon, who had been Associate Director. In February, 1915, the new and permanent home of the Mellon Institute was dedicated and all its facilities were placed at the service of American industrialists.

"The Home of the Institute.

"The building is five stories high, of granite and brick. It cost something over \$300,000, and was designed primarily as an industrial problem workshop. It is well equipped with unit apparatus for conducting industrial operations on a large scale and affords every possible facility conducive to a successful outcome of the problems under investigation.

"The Working of the System.

"When a problem is assigned to the Institute, the Director selects, after careful inquiry, the best available man who can be found for this particular work. The Fellow, as this is called, is one who has invariably pursued post-graduate work in a special field and has shown a gift for research. This man, if the fellowship has been given by an operating concern, first spends sufficient time in the factory of the donor to become acquainted with the problem at first hand. In this way he gains a knowledge of the manufacturing conditions which must be met, when the time comes to introduce the results of his research work into the factory. He then returns to the Institute and examines the literature of subject under investigation, in order to familiarize himself with what others have done on the problem. After this preliminary work, he is assigned a laboratory, and begins what may be termed the test-tube scale of experimentation.

"When the Director is satisfied that the Fellow has something of value to the Donor, a small unit plant is erected near the Institute in which to develop

the process on a miniature factory scale. If the unit plant shows that the process has commercial possibilities, the next step is to install the process on a large scale in the plant of the donor.

The Scope of the Institute.

"While the majority of researches which have been placed with the Institute have been those having to do with industrial chemistry, nevertheless the Institute has conducted, and is well equipped to conduct researches in engineering. It is well known that one, or sometimes all, of the branches of engineering must be used to work out chemical ideas.

"The fellowships which have come to the Institute have been on such diverse subjects as the chemistry of bread and baking, problems relating to petroleum, the corrosion of steel, the technology of soap and soap fats, the bleaching of animal and vegetable oils, problems relating to the manufacture of foods, the development of steam power accessories, the fixation of nitrogen, problems of hydro-metallurgy, the development of pharmaceutical preparations, the technology of glass, the production of nitrogenous and phosphatic fertilizers, and the utilization of mineral wastes.

"The Institute is, as its name implies, an institution devoted to industrial research, and as such, it is in position to assist industrials in engineering fields as well as in the fields of pure and applied chemistry.

The Success of the Institute.

"When the Institute moved into its new home, the Industrial Fellowship System passed out of its experimental stage. During the years of its development, no inherent weakness on the part of any one of its constituent factors appeared.

"The results of the fellowships have been uniformly successful. While problems have been presented by companies which, upon preliminary investigation, have proved to be so difficult as to be practically impossible of solution, there have been so many other problems confronting these companies that very soon ones were found which lent themselves to solution; and very often the companies did not realize till after investigations were started, just what the exact nature of their problems were, and just what improvements and savings could be made in their manufacturing processes.

"Fellowships are constantly increasing in the amounts subscribed by the industrials for their maintenance and, as well, in their importance. The renewal, year after year, of such fellowships as those on petroleum, baking and ores, goes to show the confidence which industrialists have in the Institute. Again, the large sums of money which are being spent by companies in bringing small unit plants to develop the processes which have been worked out in the laboratory, demonstrate that practical results are being secured.

"Where there have been sympathy and hearty cooperation between the Institute and the company concerned, the Institute has been able to push through to a successful conclusion large scale experiments in the factory of the company, which in the beginning of the fellowship seemed almost impossible.

"The results of the fellowships at the Mellon Institute indicate that a form of service to industry has been established, the possibilities of which no man can say."

To the question "Why are we imitating the Mellon Institute of Pittsburgh? President Arnoldi replies:

"Because we have every reason to believe this to be the most practical plan for accomplishing our purpose ever devised. There is no reason why the same success should not attend it in Canada as in Pittsburgh. That Institution founded with only the most meagre support has, in less than a decade, grown so that over two score researches are continually in progress and a quarter of million is annually disbursed in salaries and up-keep. The plan has shown itself sufficiently practical to encourage Pittsburgh's two leading bankers to endow it and lend their names to it. The financial returns to manufacturers have already run into millions and on the human side scores of young men have had a chance to distinguish themselves in the field of applied science, at the same time contributing to the wealth and welfare of the people at large. In commenting on the scheme recently in England, Sir Wm. Ramsay and Prof. Henderson (of Glasgow), both recommended its adoption in England, and called it, "eminently practical." An article in a German paper says "While the Americans are deficient in thoroughness and theoretical training, they have surpassed us in organization. . . . such institutions as that endowed by the brothers Mellon, at Pittsburgh, being the most efficient means of providing the manufacturer, especially the smaller manufacturer, with a scientific solution to his problems, of which we know . . . we hope for a rapid extension of this form of experiment station throughout our own country."

"The Bureau can scarcely move too rapidly. Canadian manufacturers will give it hearty support if it shows the proper flexibility. Canada's needs are great, the time short. It is to be hoped that the Provinces of the Dominion will take up the responsibility which so clearly falls to them."

THE PAPER MARKET IN SPAIN IN 1914.

(Report by Consul W. Klouman, Barcelona.)

After the outbreak of the war there was a strong demand for news printing paper, but which did not result in any great deals being closed, and the Norwegian paper mills found themselves able to close more advantageous contracts on other markets. The duty in Spain on news print weighing 24 x 36—25 to 31 lb.—500 sheets \$14.88 per net ton, to which must be added \$4.37 for unloading expenses and port dues, making in all \$19.25 per net ton, making a big difference.

Business in wrapping paper was impossible, an account of competition with the domestic paper mills.

There was a great demand for "grease proofs," but the mills at home either had sold out or the prices asked were so high that any deals could not be put through.

It is likely that the Spanish paper mills will find themselves forced to go in for a considerable increase in prices, and it is possible that then Norway will be in a position to compete with advantage.

The Effects in Spain of the Swedish Embargo on Exports of Cellulose.

Consul W. Klouman, Barcelona, has reported that according to the "Diario del Comercio," several Spanish Chambers of Commerce and paper mills have wired the Government a request to try and obtain that the embargo on exports of cellulose in Sweden may be lifted, as otherwise the paper mills will find themselves forced to close.

The Serious Condition in the Supplies of Rags and Waste Papers, and the Steps Being Taken to Remedy the Situation

(Special to Pulp & Paper Magazine.)

In New York City, during the past few weeks, has been strongly reflected the unusual shortage of rags and waste papers from which the industry is now suffering. Large packers who, heretofore would not think of being annoyed with less than immense quantities of stock, have shown a willingness to buy up waste papers in practically any quantity. One packer informed your correspondent that, in his forty years of experience, this was the first time he had ever thought of going among his friends in the publishing business to buy up what little over-issues they might have on hand.

To say that the situation in rags and waste papers was serious would be only stating the true condition mildly. The raw material markets, which have, in recent years, become dependent for sufficient supplies on foreign sources, have now practically been deprived of every outside means of replenishment. England has placed an embargo on linen and cotton rags, and paper stock. France has placed an embargo on rags. Germany and Austria, formerly both large exporters of rags before the war, have long been shut out from communication. From Italy, Spain and the other possible sources of supply, little has been coming. Even if it were possible to get large quantities of rags from these countries, it would not be possible to get them to the United States because of the great dearth of shipping facilities. So, with European stock practically unavailable, America is placed in a position where it is compelled to furnish all of the raw stock required to keep its paper mills in continuous operations.

Since the manufacturers have actually awakened to the fact that rags and waste papers were growing scarce, and that prices would undoubtedly soon become prohibitive, New York City has been the centre of excitement in the raw material markets. From all parts of the country inquiries poured in, searching for every grade. Importers, recognizing the fallacy of relying on their foreign packers, entered the domestic markets. Together with the other dealers, they scoured the West and the East, buying up whatever stock was found available. The addition of these importers to the number of buyers in the domestic market had the immediate effect of increasing competition and forcing prices much higher.

It seems that events, during the past few weeks, have conspired to the disadvantage of rags and waste papers. One of the big features in this respect is the effects caused by the congestion of freight traffic. The Interstate Commerce Commission allows the railroads, when they are unable to handle all of their business, to choose their freight. As paper stock is not classed as "desirable" and is practically among the lowest grades of freight, nearly every carrier in the East has embargoed rags and waste papers. These embargoes may truly be considered the primary cause for irritating the market to its present level. Even in cases where it was possible for manufacturers to secure stock, they found it very difficult to get the shipments to their mills. If one road accepted the stock, a connecting line might refuse to take it, and the cars would be sidetracked indefinitely. At all events, a serious delay in delivery was certain. It is now a matter of record that

several mills have shut down for short periods, because they were compelled to await the arrival of raw stock. It has been suggested that there is likely to be an accumulation of stock, about in cars which are being held on sidings, but this is not considered sufficient to ease the market. From present indications the freight troubles of the country will grow worse, and not find relief for several months. This means that unless the mills find sources of supply near their locations, they will be severely handicapped in the operation of their plants.

The awakening of the mills to these facts caused them considerable alarm. After several "shut-downs" appeals were made to the Department of Commerce of the United States Government to aid in the gathering of sufficient stock to enable the paper mills to keep running without cessation. Secretary Redfield, of the Department of Commerce, conferred with Secretary A. D. Naylor, of the American Paper and Pulp Association, and with a few other authorities on the situation and immediately sent out notices to each publication in the country, and to all of the Chambers of Commerce. The result has been, so far, that the shortage of rags and waste papers is now of common knowledge to all English-reading people of this country. In every newspaper some sort of article has appeared, containing the following notice of the Department of Commerce:

"The attention of the Department of Commerce is called by the president of a large paper manufacturing company to the fact that there is a serious shortage of raw materials for the manufacture of paper, including rags and old papers. He urges that the department should make it known that the collecting of rags and old papers would greatly better existing conditions for American manufacturers.

"Something like 15,000 tons of different kinds of paper and paperboard are manufactured every day in the United States, and a large proportion of this, after it has served its purpose, could be used over again in some class of paper. A large part of it, however, is burned or wasted in some way. This, of course, has to be replaced by new materials. In the early history of the paper industry, publicity was given to the importance of saving rags. It is of scarcely less importance now. The Department of Commerce is glad to bring this matter to the attention of the public in the hope that practical results may flow from it. A little attention to the saving of rags and old papers will mean genuine relief to our paper industry, and a diminished drain upon our sources of supply for new materials. The Department of Commerce will be glad to put inquirers in touch with the manufacturers who are interested."

This notice seemed to be the start of a "nation-wide" movement to encourage the saving of rags and waste papers. In Chicago and in a number of the other Western cities, some concerns advertised, with more or less success in the columns of the daily newspapers, appealing to the housewives to save their wastes. In Kalamazoo a church society found it profitable to encourage its members to bring their rags and old papers to

one collecting centre for disposal. Since this, the various charitable and similar institutions have undertaken to collect stock. The fact is that, at the prices now being paid for raw materials, it is somewhat enticing to think of the returns which may be had by collecting it. It must be borne in mind that whenever prices are low, the "rag pickers" find it advisable to turn their occupations to other lines, where they can get better remuneration. The present scarcity is due partly to the fact that last summer prices were so miserably poor that the business of collecting rags and waste papers in this country was almost in danger of vanishing. Of course, it will take some time before the momentum of the general movement becomes sufficient to overcome the obstacles of the past year. But with good prices ruling, there is no doubt that the mills will be able to obtain whatever raw materials they need.

The consumption of waste papers is now greater than it has ever been. In the first place the board mills of the country, which are generally the principal users of old papers, are remarkably busy, and are in need of all of the stock they can obtain. Then, again, the market has been increased so much by the demand from the manufacturers of sulphite and rag papers. These concerns have been compelled, because of the high prices and shortage of sulphite pulp and of rags, to seek substitutes in waste papers. The result has been that for such grades as hard white, soft white, book stock, and krafts, a premium is being offered. It has been figured that with the consumption of paper in this country now as great as is possible, the production of waste should be as great in proportion. This is undoubtedly true, but unless the women of the country are once more educated to revert this waste to the market, it will be of no avail, no matter what its volume is. However, with the co-operation of the government, it is most likely that the proper influence will be exerted.

One of the most significant steps thus far taken in the movement to get raw materials for the mills, was the appearance before the National Association of Waste Material Dealers, during their recent convention, at the Hotel Astor, New York City, of J. G. Taylor and E. H. Naylor, president and secretary respectively of the Writing Paper Manufacturers' Association. Mr. Taylor addressed the waste dealers, explaining the situation of the mills, and begging the co-operation of the stock men in meeting the occasion. President Birkenstein, of the National Association of Waste Material Dealers, appointed a committee to do whatever was possible to help the paper mills.

SELLING BRITISH PARKS.

England's proposed land plans calls for compulsory sales of great parks and other areas of untilled land to the government; subdivision of this land and leasing by state to returned soldiers, and small farmers; granting of loans, formation of co-operative enterprises and agricultural instruction. This will lessen tax burden of present heavy landholders, and prevent emigration of young men.

ONE CAUSE OF FOREST FIRES.

It is believed that forests sometimes take fire through the branches of trees being rubbed together by the violence of the wind, thus producing the friction necessary to ignite them.

An Interview with Mr. Steele

An extraordinary amount of interest is being manifested by the newspapers of the country in the advancing prices of paper and paper products. The Department of Commerce has called attention to the shortage of rags and the necessity of saving rags and waste papers, and the news agencies have sent out interviews with prominent men in the industry bearing on the unusual conditions now prevailing. To a representative of the New York Journal of Commerce, G. F. Steele, secretary of the News-Print Manufacturers' Association, explained that the situation was not critical at present, but might become acute with the development of a larger demand during the spring. He pointed out that the unusual demand which arose during the last three months of last year had caught the manufacturers unprepared, and as a result storage stocks, which normally are about 100,000 tons, were only 50,000 tons on January 1. Since that time deliveries have been made at a rate which has taken up all production and continued to draw upon the reserves, and manufacturers have not had an opportunity to prepare for heavier spring business.

"The maximum production of all American mills under ideal conditions is about 6,500 tons a day," said Mr. Steele. "Normally mills run on an average at 93 per cent of the maximum productive capacity, because ideal conditions are never realized. During 1915 the orders placed with the mills took up only 85 per cent of the maximum productive capacity, leaving a margin of 8 per cent, or 520 tons a day, between orders and normal production. This represents a comparatively narrow margin and was practically taken up by the heavier demand at the end of the year. This explains why the storage stocks are so low, although it may be said that all mills are now running at top capacity."

The average price of newsprint last year at the shipping point, Mr. Steele said, was \$38 to \$39 a ton, and in the contracts signed last December the price had not been advanced more than \$1 a ton on the average. He said that the price delivered before the war had ranged from \$2 to \$2.15 a hundred pounds, and that in the contracts for 1916 the advance had not been more than 5 cents a hundred pounds, and had been effective principally on the lower level, bringing the range up to from \$2.05 to \$2.15. This applies to deliveries in the East, the quotation being higher where a long freight haul is involved. He said that he had heard of one Western contract where the price was \$2.25 and one in St. Louis where \$2.20 was paid.

Cost of Production is Higher.

While the price for newsprint has been increased only \$1 a ton, and in some cases \$2 a ton, Mr. Steele said that he had letters from manufacturers telling of increased costs of production varying from \$3 to \$5 a ton. For this reason, he told the Journal of Commerce reporter, a moderate advance will probably be charged on all new contracts.

Among the factors which have added to the cost of production have been the higher prices of coal, dye-stuffs, copper wire cloth, woolen felts, and the higher freight rates. Newsprint has not been affected to the same extent as other papers, it was said. The heaviest item in the production cost is the groundwood and chemical pulp. Normal imports of sulphite, or chemical pulp, are about 400,000 tons annually, but newsprint makers are not dependent upon it in any large

degree, because most of the mills produce their own pulp. Newsprint is not affected by the shortage of rags, which are used for high grade papers, exclusively.

Mr. Steele pointed out that it takes at least a year in which to build a newsprint mill, involving a large development of waterpower. Among the mills now under construction is one for the Union Bag and Paper Co., in Quebec, which will be ready sometime this year, one for the Belgo-Canadian Pulp and Paper Co., Ltd., in Quebec, which will place an additional supply of sixty-five tons a day on the market within thirty days: one for the Donnacona Pulp and Paper Co., Ltd., of Quebec, with a capacity of fifty tons a day, ready by September, and one for the Northwest Paper Co., in Minnesota, with a capacity of thirty-five tons a day, ready in July. It will be seen that only one of these will be in a position to increase the supply against the large demand which is expected during the next three months.

Manufacturers are anxious to prevent any extraordinary rise in price, Mr. Steele said, and quotations will probably not advance beyond the increase in cost of production, no matter how great the shortage of paper to supply existing contracts. They are anxious to prevent an expansion of productive capacity to a point where it cannot be utilized after present conditions of demand are modified.

WHY PAPER IS COATED.

In reply to an enquiry as to why paper is coated for taking half-tone illustrations, the following answer has been given: "The reason that paper is coated is to produce a sheet with a surface that is absolutely smooth or plane, and coated paper comes the nearest to it of anything yet produced in the manufacture of paper. The object of producing a paper with an absolutely smooth surface is for the better printing of half-tone illustrations. A half-tone plate is a smooth copper plate with an image obtained by photographic means, etched into its surface. This plate is covered with a thin layer of ink, and it will be seen that the ink lies in varying degrees of density according to the high lights and shadows of the photograph, and if this inked plate is pressed against a surface which is not absolutely smooth the result will be very unsatisfactory. A photomicrograph view of the surface of an ordinary machine-finished paper gives it an appearance of being made up of hills and valleys, which is really true. So it will be seen that a fine half-tone plate cannot print evenly on such a surface. In coating such a surface the material used fills up the valleys and covers the hill tops, thereby creating a plane surface which is suitable for the half-tone plate."

BIG DEMAND FOR PAPER IN JAPAN.

Japanese paper mills are hardly able to cope with the multitude of foreign and domestic orders, and have recently raised prices on two occasions. Though there are only small imports of pulp, and its prices will shortly have to be raised for a third time, the Japan Chronicle says that paper mills have stocks sufficiently large to last them for the next six months. The manufacture of pulp in Japan, also, has been developing recently. Several companies are planning extensions of their mills, with the object of increasing the manufacture of paper for the markets of China.

British Trade After the War

(World's Paper Trade Review).*

The report prepared by a Sub-Committee of the Advisory Committee to the Board of Trade on Commercial Intelligence, which was presented to the Board of Trade last month, and has recently been published, contains interesting references to the paper and printing industries. The Committee was appointed last July to prepare and submit a report showing what steps should be taken to secure the position, after the war, of firms who have undertaken industries in consequence of the Exchange meetings leading up to the British Industries Fair, and among the branches of industry to which the inquiries were directed were paper manufacture, the printing trade (including color printing) and the stationary trade.

From a table showing approximately the value of the imports into this country from all sources in 1913, and the value of the imports from enemy countries, the following information relating to these three branches of trade is given:—

Paper for packing and wrapping was imported to the value of \$13,806,260.50 of which \$3,630,409.00 came from Germany and \$38,932.00 from Austria-Hungary. The bulk of the importation is from Sweden and Norway; quantities came also from Belgium, the Netherlands, and Russia.

Paper for printing and writing was imported to the value of \$11,407,076.00, \$2,019,597.50 coming from Germany and \$131,395.50 from Austria-Hungary. The chief sources of supply, other than Germany, were Newfoundland, Norway, Sweden, the United States, and Belgium. The exports of United Kingdom manufacture under this head was valued at \$11,168,617.50, of which \$7,207,286.50 to British Possessions and \$3,961,331.00 to Foreign Countries.

Imports of printed paper hangings totalled \$652,111.00 of which \$389,320.00 came from Germany. The exports of United Kingdom manufacture were valued at \$1,513,481.00 of which \$715,375.50 to British Possessions, and \$798,106.00 to Foreign Countries.

Other printed or coated paper (except sensitised photographic paper) was imported to the value of \$1,328,554.50. Germany's share of this being \$681,310.00. The bulk of the remainder came from Belgium.

Imports of unenumerated totalled \$2,019,597.50 of which \$695,909.50 came from Germany. The value of the imports from France was \$919,768.50.

Stationery (other than paper) was imported to the value of \$2,725,240.00. Of this \$1,299,355.50 came from Germany and \$194,660.00 from Austria-Hungary. The other chief source of supply was the United States. The exports of United Kingdom manufacture under this head were valued at \$9,664,869.00 of which \$5,474,812.50 to British Possessions, and \$4,190,056.50 to Foreign Countries.

The report refers to the suggestion for the establishment of a Ministry of Commerce, made to the Sub-Committee by the witnesses who appeared on behalf of the Papermakers' Association, and another Association, and attributed it to a feeling in trade circles that the great varieties of duties which the Board of Trade has to discharge unavoidably prevent that concentration of attention on commercial and trade matters which is desirable.

Under the heading of Tariff Protection the report gives the following causes of the ability of German

firms in the past to undersell their British competitors, as those upon which most emphasis had been laid:— (1) The low railway rates charged in Germany on goods for export, and other transport advantages; (b) The industrial combinations in Germany, which, with a large home market secured to them by the tariff, were able to produce on a large scale, and to dispose their surplus product abroad at very low prices; (c) The low rates of wages prevailing in certain industries in Germany.

In regard to the last named, the price competition due to low wages was also stated to be felt in the paper-making industry from Italy and Japan. On the other hand the Sub-Committee were informed as regards paper-making that "the labor bill, for the same class of output, is much the same in Germany as in Bury"; and that as regards printing, "German workshop organization is better than ours." The representatives of the stationary trade suggested that the attraction of cheapness will be such as to weaken appreciably in the case of many buyers even in this country the prejudice created by the war against things German and Austrian, though this suggestion conflicts somewhat with the view frequently expressed, and referred to in a previous part of the report, that the marking "Made in Germany," and "Made in Austria," would deter many buyers.

The amount of the tariff duties which it was suggested should be imposed on paper manufacturers was 15 per cent ad valorem, and on printed matter 33½ per cent ad valorem.

The recommendations of the Sub-Committee briefly relate to the following matters: Scientific industrial research and training; bringing the United Kingdom copyright law into line with that of the United States; securing uniformity of Patent Law throughout the Empire; trade marks on all foreign goods; transport facilities; financial assistance to British industrial enterprise; trade exhibitions under the control of the Board of Trade; protection of British trade marks abroad; establishment of a Ministry of Commerce; extension of the system of Trade Commissioners; increasing the commercial utility of the Consular Service; checking the under-valuation of foreign imports; preferential treatment of British commercial travellers in British Dominions; substantial reduction of import duties on trade catalogues to British Possessions; and tariff protection for certain manufactured articles which are of vital importance to the natural safety, or are essential to other industries. The Sub-Committee also adds that in view of the threatened dumping of stocks which may be accumulated in enemy countries, the Government take steps to prevent the position of industries likely to be affected from being endangered.

Sir Albert Spicer, M.P., makes a reservation at the end of the report to the effect that in view of the recommendations which are protective in effect, and of the fact that during the continuance of the war manufacturers are automatically protected and that for some years after the war protection, equivalent to import duties, is likely to be afforded by the prejudice against German and Austrian goods, he feels that the consideration of a tariff for these special industries should wait until after the war, unless it can be undertaken earlier, when the whole issue can be again considered in the light of what, he hopes, will be an agreed policy with our Dominions overseas and our present Allies.

Waterproof Paper and its Manufacture

A British patent (No. 1231, 1915), has been granted to Mr. Jacob Kindleberger, of Kalamazoo, Michigan, U.S.A., paper manufacturer, for an invention relating to improvements in waterproof paper and the process of manufacturing it. The complete specification states: According to the invention, I parchmentise paper, then subject it to the action of glycerine, and finally impregnate it with a molten impregnation medium such as paraffin. The sequence of these operations is an essential feature of the invention, parchmentised paper having been treated with paraffin wax and the like, and simultaneously or subsequently with glycerine. As the means which I make use of in carrying out my process are well known to paper manufacturers, I have not deemed it necessary to illustrate the same. In carrying out my process in the preferred form, I take plain unglazed paper in the form of the water-leaf of any desired grade. The better the grade, however, the better the product, and a pure cotton rag paper gives the best results. I subject the sheet of paper, by proper machines or devices, to the action of a solution of sulphuric acid of a test of about 54 degrees Baume. The sheet is passed through this solution quickly, but is completely submerged and acted upon by the acid. The acid may safely test from 53 to 60 degrees. Any strength that will parchmentise and not burn the sheet is permissible. The sheet is then passed through a washer and thoroughly flooded and washed with clear water, so that all the acid is flooded and washed away. The sheet is then thoroughly dried. The dried sheet is then subjected to the action of a solution of glycerine, the same being passed through a bath of glycerine, which is squeezed off by suitable rollers and the sheet dried by suitable fans, or otherwise, so that the water of the glycerine solution is practically dried away. That is to say, as much of the moisture is evaporated as such drying means will eliminate. To secure best results, the glycerine treatment is repeated after about twenty-four hours. An antiseptic, such as carbolic acid, may be added to the glycerine. The solution of glycerine varies from 65 to 75 per cent of glycerine, the balance being water.

When the parchmentised sheet of paper has been treated with glycerine for 24 hours or such a matter to a tight roll and allowed to remain for a period of 24 hours or more. This ensures that the glycerine shall permeate the parchmentised sheet as completely as it is possible for that to be accomplished by the glycerine, and the water has already been dried out of the same so far as that is practical.

The glycerine solution can be varied in strength. It is desirable to incorporate the glycerine with the sheet in the minimum amount in practically a pure form to secure the best results.

After the parchmentised roll of paper has been thus treated with glycerine for 24 hours or such a matter, the sheet is then passed through a paraffin coating machine to very effectively and completely waterproof the same. The result is that a very effectual waterproof sheet is secured, which is not liable to breakage from abrupt folding, and which is substantially as flexible as a sheet of cotton or linen fabric, and is very strong and durable.

The material thus produced is very desirable wher-

ever any waterproof sheet is desired. It provides a substantially perfect waterproof bed covering, taking the place of a rubber sheet in all surgical cases, and is highly desirable for use in infants beds and as a diaper or for use with diapers. The same constitutes an effective waterproof wrapping for any article or purpose. The material being impervious to moisture and a non-conductor can be wrapped over the top of a cake of ice in a refrigerator and prevent waste.

The process of applying glycerine and paraffin can be made use of in the treatment of ordinary parchmentised paper, but I prefer the exact method which I have indicated for the preparation of the parchment sheet itself, as the best results follow, and the glycerine and paraffin are more completely, and effectively incorporated into the sheet in this way.—Paper Maker and British Paper Trade Journal.

WASTE IN FOREST PROTECTION.

Because of lack of field supervision, more money is wasted in fire protection to-day than is used economically. Fire wardens are nearly all temporary ones, and if one does not give them supervision and training, and does not try to keep the good men from year to year, one cannot get the results desired. In the first fire protection services of Canada, far more wardens were wasting money than were making good use of it. Unless we have good permanent supervision of fire protection, and have the same men as permanent rangers year after year we will not get the good results because we have large areas to protect with very small sums of money.—McMillan, in Forestry Journal.

BRITISH PAPER AND PULP IMPORTS.

Great Britain imports 350,000 tons of sulphite pulp, 500,000 tons of wet ground pulp and 300,000 tons of paper annually.

PRESIDENT DUBUC RETURNS.

President J. E. A. Dubuc, of the North American Pulp and Paper Companies of Chicoutimi, has just returned from Europe. He is most optimistic regarding the future of the pulp and paper industry, and foresees a big paper business between Canada and Great Britain following the war.

SHIPS FOR THE LUMBERING TRADE.

A bill is to be introduced in the coming session of the British Columbia Legislature authorizing the government to build thirty four-masted schooners to be fitted with auxiliary Diesel engines to be used in the lumber carrying trade.

GERMANS ARE WORRYING.

The German Newspaper Proprietors' Association has met in Berlin to discuss measures preventing the scarcity of paper for newspapers becoming really serious. It was decided to ask the Government to restrict the consumption of paper during the war and to fix such a price for it that German newspapers can continue to appear uninterruptedly.

SWEDISH PAPER PRICES.

The Swedish Paper-Makers Association have decided to increase the prices of all kinds of paper, excepting coloured papers, by 10 per cent.

MONUMENT TO A TREE.

Perhaps one of the most curious monuments in existence has recently been built in Ontario by Canadians, says The Popular Science Monthly. The farmers have just erected a marble pillar to mark the site on which grew a famous apple tree.

More than a century ago a settler in Canada named McIntosh, when clearing a space in which to make a home in the wilderness, discovered among a number of wild apple trees one which bore fruit so well that he cultivated it and named it McIntosh Red.

The apple became famous; seeds and cuttings were distributed to all parts of Canada, so that now the McIntosh Red flourishes wherever apples grow in the great Dominion. In 1896 the original tree from which the enormous family sprang was injured by fire, but it continued to bear fruit until five years ago. Then, after 15 years, it died, and the grateful farmers have raised a marble pillar in honor of the tree which did so much for the fruit-growing industry of their land.

The story of this apple tree illustrates the African proverb that, though you can count the apples on one tree, you can never count the trees in one apple.

WAYS OF SAVING PAPERS.

Some of the suggestions in the daily press, having for their object utilization of waste paper, are most amusing. Wading through reams of press cuttings which have reached us we think the limit is easily reached by a correspondent who suggests in the "Referee" that he (or is it a she) has a grand way of saving paper as a war economy. He says:

"When I write an article I write in pencil. The typist gives me back my copy when she has typed it. Then I rub out the pencil and use the paper for another article. I used to use fifty sheets for six thousand words. By writing in pencil I am able to use each sheet five times, and that is a saving of many sheets. After the fourth rubbing out the paper gets too thin for any further economy. Then I twist it up into paper spills and use them instead of matches."—Paper Making.

VARIOUS PAPER TROUBLES.

Paper industry in the United States is threatened by lack of wood and sulphite pulp and dyes from Europe. Paper mills refuse to accept any more orders for 30 days at least. A number of mills have already closed and it is declared present supplies of raw materials keep the paper industry going only until May. Part of shortage in rags is due to its demand by Delaware and Virginia powder manufacturers for gun-cotton.

A TRAGEDY TOLD IN VERSE.

"Only a man in a forest green,
Only a match that was dropped unseen,
Only a flame, some leaves and wood,
And, only a waste where the forest stood."

THE PAPER SHORTAGE.

Mr. Runciman has informed British newspaper proprietors that the restrictions which he proposes upon the imports of paper would result in the release for other services of sixty average-sized merchant vessels. Inventive genius, spurred by necessity, may discover a substitute for wood pulp.—Toronto Globe.

Great Britain's Sources of Paper

In an address before the Society of Arts in London, S. C. Phillips, editor of the Paper Maker, gave some particulars about sources of paper supply, especially as affected by the war. He said:

In pre-war times this country supplemented its own production from imported woodpulp of newsprint paper by imports of the finished product to the amount, in 1913, of 131,443 tons. Of this total, about 85 per cent came from Norway, Newfoundland, and Sweden, in the order indicated. In 1915, when our imports of paper on reels from all sources fell to 106,720 tons, Newfoundland contributed 44.7 per cent, Norway 30.3 per cent, and Sweden 11.2 per cent. Thus for the first time in the history of the paper trade Newfoundland took the leading position as an exporter to this country of paper on reels, her contribution being 47,789 tons, or 15,410 tons more than that of Norway. Taking the total imports of printing and writing papers, both on reels and not on reels in 1913, our imports from the various countries were:

Norway, 33.9 per cent; Newfoundland (entirely on reels), 17.4 per cent; Sweden, 16.2 per cent; Germany, 13.5 per cent; Belgium, 2.6 per cent; United States, 2.3 per cent; other countries (including Austria, Italy, and Canada), 8 per cent.

In 1915, when our total imports of the same kinds of paper were 139,170 tons, or 47,409 tons less than in 1913, the percentages for the various countries were: Newfoundland, 34.7 per cent; Norway, 33.5 per cent; Sweden, 14.5 per cent; United States, 4.7 per cent; other countries (including Holland, Italy, etc.), 11.3 per cent.

While the supplies from Norway and Sweden fell off by nearly 26 per cent in the two years, those from the United States increased by over 51 per cent, those from Newfoundland by 11 per cent, and those from "other countries" by 7.5 per cent.

Mr. Phillips added, in referring to the woodpulp resources of Canada, that Newfoundland and Labrador were both rich in pulpwood and would eventually become enormous sources of supply.

TREES FOR DISTRIBUTION.

At the government nurseries located at Berthierville, for the Province of Quebec, at St. Williams, Ontario, for the Province of Ontario, and at Indian Head, Saskatchewan, for the Dominion Government, and at Sutherland, Saskatchewan, stock will again be available this year. The number of trees shipped from Indian Head has steadily increased from over two and one-half million in 1910 to about three and three-quarter million in 1914. These trees are distributed among farmers throughout the prairie provinces mainly for shelter belts, woodlots and the beautifying of grounds around buildings.

LAURENTIDE TIMBER TESTS.

Some tests of the weight of freshly cut woods have just been made by the Laurentide Company, and show that brown ash weighs 50.26 pounds per cubic foot, yellow birch, 64.40 pounds, white birch 55.62 pounds, elm 71.31 pounds, and sugar maple 73.36 pounds.

Forest Conservation in Canada

Mr. Robson Black, secretary of the Canadian Forestry Association recently delivered a most interesting address before the Science Undergraduate Society of McGill University. The subject of the address was "The Progress of Forest Conservation in Canada."

Mr. Black traced the advanced condition of forest conservation in Europe, mentioning the little town of Baden in Switzerland, which made a revenue of \$66,000 from a patch of municipal forest that Canadians would sacrifice to flames and never give it a thought. A striking contrast was drawn between Belgium, which previous to the war was planting forest lands at \$20 an acre, while all that Canada required to keep her forests where they are to-day was a quarter of a cent per acre for adequate fire protection.

How important was the retention of forest growth and protection from fire was evidenced by the existence of 5,000 wood using factories in the Dominion. 65 pulp and paper mills and 110,000 workmen, who literally looked to a living tree each day for their meals and lodging. What great possibilities would ensue when science set to work devising new uses for the Canadian log was illustrated by the speaker, who told of such by-products as lard, wash towels, acetone for high explosives, chloroform, and pine oil for extraction of precious metals.

Mr. Black stated that the forests poured out a stream of wealth every year totalling \$200,000,000, which took no account of the value of water powers, true derivative of forest growth. Unlike our conduct in ordinary business, Canada had placed only a meagre insurance policy upon the raw materials absolutely requisite for the wood using industries. Many were inclined to rest their faith in the so-called "Illimitable" forests of "the far north" and other fabled sections of unknown Canada, but the speaker showed that within the old boundaries of Quebec, Ontario, British Columbia and New Brunswick was gathered up practically all the merchantable timber, and that the forests of the "far north" were only skeletons of once fairly valuable woodlands.

The lumberman's profits, the speaker showed, were a minor end of the money stream from the sale of forest products. Every dollar coming from a log could be divided into three parts, the two parts going to wages and supplies, and one part to the lumberman to pay interest on his investment and a part of the seven millions in annual dues which he turns into the Canadian governments. Mr. Black closed with a review of the forward movements in forest conservation as manifested in Quebec, British Columbia, the control of railway fires, and the work of the Dominion Forestry Branch and the Forest Products Laboratories of McGill. One hundred and fifty pictures were shown.

REFORESTATION IN CHINA.

Experiments by a British expert of reforesting some of the hills of China have led to the establishment of a comprehensive course in forestry in a university in that country.

NATIONAL PAPER MOVES.

The National Paper Company, Limited, whose mills are located at Valleyfield, Que., have moved their head office from the Read Building, Montreal, to Valleyfield.

The Proper Treatment of Press Felts

(Translation from Papir-Journalen Christiania, Norway).*

The careful treatment of the press felts is of the greatest significance for their durability; the point is therefore to watch the factors which are decisive for the usefulness of the felt.

If the felt has been in use a long time and the strength of the fabric is worn beyond a given low point, it may happen; that the felt be run to shreds, that its ability to let water through is reduced with the result that the felt is shifting the paper, or else the surface of loose woolen fibres that cover the weave may be so worn as that the felt is "marking".

The strain to which the felt is exposed depends on the pressure of the rollers and the felt washers and also on the stretching necessary for smooth running and finally on the friction between rollers and felt, caused by the unavoidable slipping. This makes it necessary to reduce as much as possible such wear and tear. It is not possible to lower the roller pressure as it would counteract the absorbing process, anyhow, this strain is of less significance, particularly if the lower rollers are furnished with elastic rubber coating. But care should be taken that the rubber layer really is elastic.

Too much stretching of the felt happens too often. The felt should not be stretched more than necessary in order to prevent it from wrinkling, this will preserve the ability of the felt to absorb the water. A re-stretching of felts which are "shifting" many a time is undertaken as a makeshift, however, this should not be done since it greatly reduces the life of the felt.

The fact that the felt must drive all the felt carrying rollers (stretching and regulating rollers) and keep them running, is of great influence. The more power these rollers need for rotation, the more the felt will be strained. Light, well greased, regulated bearings and consequently easy running rollers will lengthen the life of the felt. Even the diameter of the roller plays a great part; the greater it is, the less power is needed to reach the same rotary speed and the less is the stretch and strain of the felt.

As remarked, the felt serves to drive the guiding rollers, and this will (as is the case for instance with all belt-driving), cause slipping and friction. The solidity of the fabric is less affected by this slipping, whereas the thin woolen nap that covers the fabric, will be worn. This slipping cannot altogether be avoided but it may be reduced by using metal rollers with clean and smooth covers. They must be mounted absolutely vertical on the shaft and must be accurately cylinder shaped. Spiral rollers should be as much as possible avoided since the friction is then greater.

The friction of the fibres between themselves can not be obviated, but may be reduced by making the diameter of the guide rollers as large as possible. The pressure ought to increase gradually from the first to the last press.

The absorbing ability (i. e., the ability to let the water through) is a special requisite of the felt that is not on a par with the solidity and strength of the felt. Solidity and absorbing quality must therefore be adjusted in accordance with the quality of the paper to be manufactured. The first water press which has to effect the larger part of the absorbing, needs a felt with great absorbing ability, whereas consideration for

the solidity (which depends on a close and thick fabric) is only of secondary importance. Only on the second and the last press, where the need for absorbing is less vital, that consideration for the solidity should become more prominent; but here the wearing of the felt is lighter which would justify the use of lighter felts. In order to most rationally utilize the felts, they ought to be of the same length and the felt, after having been used for some time on the first press, should be placed on the second press to be removed from there to the third and so on.

In order to preserve the absorbing ability of the felt, it must be frequently cleaned and washed so as to remove solid particles which otherwise would clog the fabric. For that purpose a felt washer in the paper machine is generally arranged. The wear on the felt by this continued washing operation under heavy pressure is great, but at any rate it is cheaper than to stop the machine for replacing the felt for washing. The felt washer must run with accurately the same speed as the felt.

The advantages of washing the felt outside the machines are: less wearing of the felt on account of reduced pressure of the washing rollers and the possibility of using hot water and dissolving substances for the removal of impurities. The felt should not be treated with too stiff brushes.

The felts ought to hang in airy, dry places, protected against moths and the position in which they are hung, from time to time ought to be changed if they are to be stored for a long time. If the paper machine for some time is to remain at a standstill, and the felts are not removed, they should be washed, the stretching lessened, and the felt protected against rust spots by placing paper between the felt and the roller. If the felt is removed from the machine, it should first be washed and after having been dried, it should be stored in a sensible way as mentioned before.

As for the life of a felt, that, aside from the treatment mentioned, depends on the length of the felt, the quality and thickness of the paper and the speed.

It is, however, to be recommended to keep a felt diary in which to enter all the manipulations which the felt undergoes (mounting, turning, changing, washing, etc.), and the time it runs and the kind of product it is used for. In considering the strain the felt has been exposed to, when used for the different qualities and thicknesses of paper, it will after a time, be possible to form a reliable opinion of the advantages and the shortcomings of the different kinds of felt.

AMERICAN WRITING PAPER CO.

Business with American Writing Paper Co. is decidedly of the boom variety. Sales for a number of consecutive weeks have been running 80 per cent to 100 per cent ahead of the same weeks a year ago. And the 100 per cent gains have been in the most recent weeks. The amount of goods billed out to customers is not showing so big a percentage of increase, but even here the gain is running around 50 per cent to 55 per cent.

Prices of paper have been advanced an average of perhaps 30 per cent, which it is declared temporarily at least offsets the increased cost of raw materials.

LEAVE OF ABSENCE.

Prof. R. H. McKee, of University of Maine, has been given leave of absence for remainder of college year to assist in developing process for manufacture of potash from silicate rock, on which he holds patents.

*Furnished by the American News-Print Mfg. Assoc.

UNITED STATES NOTES

The Mount Holly Paper Mills, Inc., of Mount Holly Springs, Pa., will re-open within a short time. The mills are being remodelled and machinery is being installed. The mill property is owned by F. S. Maynard, of Boston, who recently headed a corporation known as the Mount Holly Paper Mills Company, Inc. It was the original intention to remodel the entire plant with an expenditure of \$100,000, but owing to the high price of paper, only necessary changes will be made so as to get the product on the market as soon as possible.

* * *

Francis W. Warren, of Watertown, N.Y., one of the best-known paper mill experts in the country, will leave for Sweden on the first of May, provided passage to that country is possible. He will make the trip to Europe to look after a number of patents in which he is interested, and also to act in an advisory capacity to a large paper company with mills in a more southern part of Europe.

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The new superintendent of the mills of the St. Regis Paper Company in the Black River Valley is Thomas Wart, formerly of the Tidewater Paper Mills Company, Brooklyn, N.Y., and he assumed his duties on March 18. He has been connected with the Tidewater Company for several years.

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The Bangor House, Bangor, Me., was the scene of a pleasant occasion one night during the past fortnight, when managers and foremen of departments of the Eastern Manufacturing Co. enjoyed a banquet in the English room on the ground floor. Covers were laid were 54. The banquet was one of the get-together meetings which tend to the promotion of good feeling and harmony of action in business between the men who conduct this big industry.

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The contract for the construction of the new pulp mill at Westbrook, Me., for the S. D. Warren Company, has been awarded to the Abbott-Hall Construction Company, of Boston, Mass. Ground was broken last week for the start of the operations.

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According to information received from the office of E. A. Flangan, he will handle the entire output of the Hartje Paper Manufacturing Company, of Steubenville, Ohio, which has been making water finished fibres, butchers' manila, news, krafts, boards, mill wrappers and sheathing papers. It is understood that a general reorganization of the plant will be effected so that high grade papers can be manufactured, Mr. Flangan will continue to make his headquarters in New York in the Woolworth Building, and will still act as United States agent for the Wayagamack Pulp & Paper Company, of Three Rivers, Quebec, looking out for its trade in this country.

* * *

A. G. Pagel has resigned his position as salesman for Pierce & Pierce, wood pulp importers, of 30 East Forty-second Street, New York, to undertake a new proposition which will necessitate that he spend consider-

able time in Europe. Mr. Pagel sailed from this city on Saturday last.

* * *

Foreclosure proceedings brought against the Russell Falls Paper Company, of Russell, Mass., by the Worcester Trust Company, as trustee for bondholders, who was secured by a \$25,000 mortgage on the property of the paper concern, were halted last week by a temporary restraining order issued by Judge James M. Morton, of the United States District Court in Boston. The foreclosure sale, which was to have been held in the office of Deputy Sheriff George B. Miller, at his office, 4 Court House Place, at 1 o'clock on the afternoon of March 9, was postponed until the same hour on March 29.

* * *

The first section of the new buildings being erected in Washington, D.C., as an addition to the District of Columbia Paper Manufacturing Company, is nearing completion. The buildings, which are strictly fire-proof and up-to-date, have been in course of construction for some months. Some of the machinery which is to be used for equipping the new buildings, has already arrived. No calculations are being made by officials of the company as to when the installation of machinery will be finished, and in operation.

* * *

S. V. Thompson & Company report having signed articles of agreement for the transfer of the Miller-Coulson interests in the Union Paper Mill Company, at Monongahela City, Pa. The purchase was made in the interest of out-of-town parties. The property consists of an acre of land on which there are four fire-proof buildings, provided with railroad shipping facilities.

* * *

A. F. Richter, of the Hall & Richter Paper Company, Northumberland, N.H., hopes to run the first paper over the machine in the company's mill at that place during the month of May. This company took over an old pulp mill at that place, and has been putting it in shape this winter to run as a paper mill.

* * *

Workmen who are installing the new machinery for the Rex Paper Company at Kalamazoo, Mich., are rushing the job as fast as possible. The drying end of the big paper machine has been placed, and the shafting throughout the mill is now being installed. Everything indicates that the new mill will be ready for operation just as soon as the officials had expected it would be. The new mill is regarded as one of the best arranged in the country, the plant having been planned by John King, president of the company, and Daniel Albertson, the well-known paper mill engineer.

* * *

Quite a few improvements are being made by the King Paper Company's mill at Kalamazoo, Mich. A new 300 kw. steam turbine will be installed in the very near future. King-Neary suction rolls have been installed, and a blower system has been placed in the coating room. It is probable that more improvements will be made in the near future, as the company is finding it difficult to take care of all the business that is coming its way.

Ottawa Notes

(Special Correspondence)

Ottawa, Ont., March 28.

The Railway Commission at a sitting last week approved of the acceptance by the express companies of a corrugated cardboard box for the shipment of live poultry. The non-refillable cardboard egg container is already a fact and now comes the cardboard poultry container as an evidence of the rapidity with which various paper products are invading this field. The express companies have hitherto objected to the corrugated boxes for the shipment of live poultry although they accepted them for eggs and day old chicks. The principle of the boxes was explained to the companies by Prof. F. C. Elford of the Experimental Farm at Ottawa, and occasioned some surprise but proved acceptable.

The fact that domestic flax has been demonstrated to be suitable for the manufacture of fibreboard in place of imported flax waste was urged as one of the reasons for Dominion encouragement of the flax-growing industry in this country when the subject came up for discussion in Parliament a week ago. Mr. Frank Glass, of East Middlesex, and other members pressed upon the Government the advisability of federal assistance for flax production, the amount of which in Canada last year was valued at \$15,000,000, but which could easily be greatly increased. Mr. Glass stated that commercial tests had shown that domestic flax and straw might be used in place of imported flax waste in fibreboard manufacture. This having been demonstrated it would seem in line with the campaign of increased production on which the Government had been bending its energies since the beginning of the war, that Canada's millions of tons of flax straw should not be allowed to go to waste. Mr. Glass pointed out that Canada's flax acreage in 1912 had equalled that of the United States in 1914, and that in the United States the paper producing possibilities of the straw of seed flax in that year were said to equal the the annual production of wrapping paper and more than double the annual American production of writing paper. The Government's answer to these representations was that everything possible in the line of instruction would be done to encourage flax growing in Canada. Experts were being brought from Ireland and other countries to encourage its culture.

The forestry battalion of 1,500 men which has been in process of organization in Canada will shortly go overseas, the War Office having sent a hurry up call for its services. It has attracted the services of prominent members of the lumber and paper producing industry all over the Dominion. Captain, the Hon. Angus McDonnell of Victoria, B.C., has enlisted with the battalion and will take charge of the recruiting in British Columbia. Mr. W. H. Racey of Montreal, has been looking after recruiting in Quebec; Mr. J. L. Miller, of Halifax, has been attending the organization in the Maritime Provinces, while Major Gerald White, of Pembroke, member for North Renfrew; Alpin Ferguson, of the J. R. Booth Company, and W. G. Wilson, of the Pembroke Lumber Company, have been recruiting in the Ottawa Valley. The battalion was inspect-

ed last week by H. R. H. the Duke of Connaught, and made a splendid showing.

A decided increase in exports of paper and a decrease in its imports; a decrease in the export of pulpwood and an increase in that of pulp were the features of a preliminary trade statement issued by the Trade and Commerce Department covering the 1915 calendar year. Exports of paper in 1915 were \$18,452,708 as compared with \$15,118,138 the year previous. The export of pulpwood was \$6,164,113 as compared with \$6,680,490 in 1914. As compared with the 1914 showing \$8,865,486 the export of pulp was greater, being \$9,279,414. Imports of paper were \$4,523,067 in 1915 as compared with \$6,426,505 in 1914.

MAC.

FOREST PROTECTION IN CANADA.

According to press reports, Sweden proposes to cut off the export of chemical pulp to Great Britain. Naturally, all eyes are immediately turned to Canada to supply the threatened deficiency.

The Commission of Conservation has just issued a report on "Forest Protection in Canada, 1913-1914," which is of particular interest in this connection. It contains much information respecting the work of the provincial forest services, and of the Federal departments intrusted with the care of our forests.

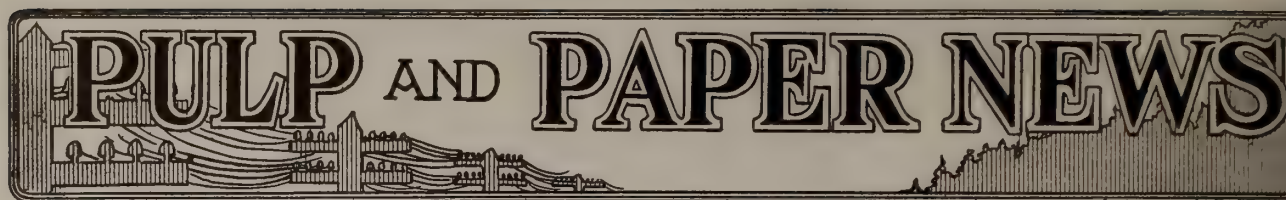
Forest fire protection is assuming a large place in public attention. It is obvious that, if Canada is to continue as a wood-producing country she must conserve her resources of this natural product. The report treats exhaustively of the fire protection of forest lands along railway rights-of-way. Through co-operative action, great headway has been made in securing the reduction of forest losses through fires traceable to railway causes.

The forests of British Columbia and on Dominion lands in the West have been dealt with in reports containing the results of special studies conducted by Dr. C. D. Howe and Mr. J. H. White. The Trent watershed in Ontario, has also received especial attention, in a report of an investigation by Dr. C. D. Howe in the townships of Burleigh and Methuen. This district is important in that, while of very little value as an agricultural area, it is being repeatedly overrun by forest fires and the little remaining merchantable timber destroyed. It is suggested that the area be placed under the control of the Dominion Forestry Branch for protection from fires and for reforestation.

PAPER STOCK SHORTAGE.

Shortage of paper stock in the United States was discussed at a conference a few days ago between Secretary of Commerce Redfield and Charles A. Holder, of the Foreign Trade Advisers Office. France's embargo on the export of rags has caused many American manufacturers to fear they may have to curtail production of their mills. The Department of Commerce recently appealed to housewives to save old papers and rags. The department has started sending out 1,000,000 circulars to be posted throughout the country urging that papers and rags be saved. The Commerce Department promises to put those who save papers and rags in touch with manufacturers. Chambers of Commerce and trade associations have been asked to co-operate.

PULP AND PAPER NEWS



Alfred McNaughton, lately with the Carswell Co., publishers of law books and dealers in stationery, Toronto, has been appointed manager of the Toronto branch of W. V. Dawson, Limited, wholesale stationers, 64 Front St. West, succeeding Alex. White, who has been made manager of the Montreal establishment of the firm.

A. G. Pounsford, who has been paper expert of the Champion Fibre Co., Canton, North Carolina, and delivered an instructive address before the Canadian Pulp and Paper Association at their last annual meeting in Montreal, is expected to arrive in Toronto at the beginning of April, to assume his new duties as Safety Engineer of the Ontario Pulp and Paper Makers' Protective Association, under the Workingmen's Compensation Act. He will have his office in the Bell Telephone building.

C. H. L. Jones, manager of the operating department of the Spanish River Pulp and Paper Co., who has his headquarters at Sault Ste. Marie, Ont., is giving up the paper business until after the war, having been gazetted Lieutenant-Colonel. He will assume the command of the new 227th Regiment, which is being recruited at the Soo. Mr. Jones was instrumental a few years ago in organizing the 51st Soo Rifles, being Junior Major. Later he was made Senior Major. He has always taken a deep interest in military matters. In the paper world he was with the old Sault Ste Marie Pulp and Paper Co., which later became the Lake Superior Paper Co., and a couple of years ago he was appointed to his present position.

Miller Bros., Co., Limited, whose plant at Glen Miller, Ont., was visited by fire a few months ago, which played havoc with the machine room, will resume operations about the middle of April. The company make straw and wood pulp board, and straw and wood board egg fillers. The wet end of their cylinder machine has been rebuilt, and new beating engines installed.

Joseph Kilgour, of Toronto, President of the Canada Paper Co., and wife, who have been spending a few weeks in the Southern States, have returned to Sunnybrooke Farm.

Charles F. Mansell, sales manager for the Toronto Paper Mfg. Co., Toronto, is spending a pleasant holiday in Jamaica, and other West India Islands.

John Dickinson and Co., Limited, paper makers, who have several plants in the Old Country, have sent out notices to that trade that, owing to the unsettled condition of the raw material market, they have been compelled to withdraw all prices, but that they will be glad to furnish quotations for any of their stock in hand for prompt delivery, and, when figuring on quotations, it is advisable to make certain that the stock is available. The company have Canadian offices in Montreal and Toronto.

The Whitlock Printing Press Manufacturing Co., a corporation created under the laws of the State of Connecticut, has taken out an extra provincial license to do business in Ontario and have appointed Frank

W. Manton, of Toronto, as their representative in the Province. The company are empowered to expend forty thousand dollars in operations in Ontario.

In recognition of his work in recruiting for the Norfolk County Battalion, Hal. B. Donly has been gazetted an Honorary Colonel. Col. Donly is the proprietor of the Simcoe Reformer, and is a Past President of the Canadian Press Association.

Canadian Hardwoods, Limited, have been granted a provincial charter with a capital stock of \$150,000 and headquarters in Ottawa. The Company is empowered to carry on business as timber, lumber and wood merchants and to deal in such materials, and to take over the timber limits, plant and other effects of A. R. Campbell. Among the incorporators are Charles Magee, John I. McCracken, Edward McMahon and Harold E. McMahon, all of Ottawa.

An agreement has been entered into by the Algoma Steel Corporation and the Great Lakes Power Co., a newly organized corporation composed of United States capitalists, providing for the purchase of the corporation's power plant at the Sault Ste. Marie, Ont., the street railway system and the international ferry system running between the two Soos. The plans also provide for the improvement of the power plant at Sault Ste. Marie, Ont., to the extent of nearly three million dollars. Thirty thousand horse-power will be developed in the completed plant, nearly all of which has been contracted for. Among those, who are said to have entered into contracts, is the Lake Superior Paper Co. Mayor McPhail, of Sault Ste. Marie, Ont., is a director of the new company.

It has been rumored that one of the leading book and writing plants of Ontario intended putting in a cylinder machine for the making of duplex papers, but it is learned on the best of authority that the company in question has no intention of expanding at the present time, being too busy on their regular lines, and that no changes will be made in equipment until the war is over.

The contract for the concrete dam, power-house and spur line of three miles running from the Canadian Transcontinental railway north of Smooth Rock Falls, where the Mattagami Pulp and Paper Co. will erect a seventy-five ton sulphite plant, has been allotted to Morrow and Beatty, of Peterborough, who were the contractors for the mills and dam of the Abitibi Power and Paper Co. at Iroquois Falls, Ont. A. G. McIntyre, general manager of the company, which will erect the new mill reports that work will start on the construction of the dam as soon as possible. It will be about 800 feet wide, with 45 foot head, and will result in the development of some six thousand hydro-electric horse-power. The Mattagami Co. are erecting a portable saw mill on their property which will have a capacity of some thirty thousand feet of lumber per day, and a planing mill will also be built at an early date. It is the intention of the company to take out all their own timber and lumber in connection with the building of the sulphite mill and a model town will be estab-

shed at Smooth Rock Falls. Duncan Chisholm, of Chisholm's Corporations, Toronto, who is looking after the financial end of the company, was in New York last week on business and reports matters as progressing in a very satisfactory manner.

The printing and publishing firm of Kuhn-Merrill, Limited, Ottawa, has been reorganized and the new name of the concern is Dadson-Merrill, Limited. The change has been brought about by the death some time ago of Con Kuhn, senior member of the firm. The new men are S. F. Dadson, sales manager of the company and T. Miller. Mr. Dadson was with the Mortimer Co., Ottawa, for some eight years and previous to that was with "Punch," in London, for four years. Horace Merrill was for fifteen years with the Mortimer Co. before entering into partnership in the present business. He is Captain of the Ottawa Hockey Team.

W. J. Gage, President of W. J. Gage and Co., Toronto, and the Kinleith Paper Mills, St. Catharines, Ont., is asking twenty thousand dollars from the city of Toronto for changing the grade of streets in front of his property at the northwest corner of Bathurst St. and Davenport Road. The sum is claimed as damages if part of the city's retaining wall can be removed; if not then sixty thousand dollars is asked. The contention of the city is that the property is not damaged. The hearing of the claim is now going on before the official arbitrator.

The plant of the Toronto Paper Mfg. Co., which is located at Cornwall, Ontario, will be shut off for two or three weeks at the end of the present month while the water is out of the Cornwall canal when the mill will be given a thorough overhauling.

At the annual meeting of the F. N. Burt Co. held in Toronto recently, S. J. Moore, of Toronto, was re-elected President, and A. E. Ames and F. N. Burt, Vice-Presidents. These gentlemen, along with Hon. W. Earl Ely, Hon. C. H. Duell, James Ryrie, Alfred Jephcott, and Dr. William Findlay compose the directors. Profits during the year ending December 31st, 1915, amounted to \$222,267 and were the largest in the history of the company. After paying dividends of \$138,664 on preferred stock, and \$30,000 on common, and transferring \$45,000 to reserve, a balance of \$161,255 was carried into 1916. President Moore stated that the directors had considered raising the dividends on the common stock from four to six per cent where it formerly stood, as the company was fully able to do this, but they thought that as the raw material situation was so uncertain and the country in a state of war, it would be better to postpone action a little while before restoring the rate. The sales in December, January and February were sixty per cent ahead of those of the corresponding months a year ago.

A federal charter has been granted to the United Wall Paper Co., Limited, Toronto, with a capital stock of \$10,000. The company is empowered to buy, sell and deal in wall papers, decorative papers, etc.

W. D. Woodruff, President of the Lincoln Paper Mills Co., Merritton, Ont., and wife, have been spending a few weeks at Jekyll Island, off the Coast of Florida. The annual meeting of the company was held recently at which most satisfactory reports were presented for the past year. Both the Lybster and Lincoln plants are exceptionally busy, and recently another story was added to the office and the interior refitted making the office quarters very bright and attractive. During the past year the company have

placed several new products on the market which have met with signal success not only in Canada, but in foreign countries as well. The new lines are greaseproof and glassine papers, onion skins and manifolding papers. W. D. Woodruff was re-elected President and Manager of the Company; A. S. Woodruff, Vice-President, and W. M. Shea, Secretary.

Thomas Todd, a veteran printer and a former partner in the Monetary Times, Toronto, died on March 23, aged eight-three years. His death was hastened by a fall downstairs when he cut his head severely and became unconscious. He was unmarried.

John Dickinson and Co., a British company of paper makers, have taken out an extra provincial license to do business in Ontario and are empowered to expend the sum of forty thousand dollars in carrying on operations in the province. This firm recently took over the stock in Toronto of the National Paper Co., of Valleyfield, Ont., and will look after the jobbing end. E. G. H. Clarke will still be the direct representative of the National Paper Co. in Toronto and the Province of Ontario.

W. P. Ryrie, Managing Director of the Becker Co. of America, recently returned to Toronto, where after spending a few days he went back to Atlantic City. He is improving in health and hopes for a permanent recovery at an early date.

I. H. Weldon, President, and S. F. Duncan, Secretary-Treasurer of the Provincial Paper Mills Co., Limited, Toronto, have returned from an extended trip on business through Quebec and New Brunswick where they were looking into the raw material situation which is becoming an increasingly serious factor with all the paper mills of the Dominion.

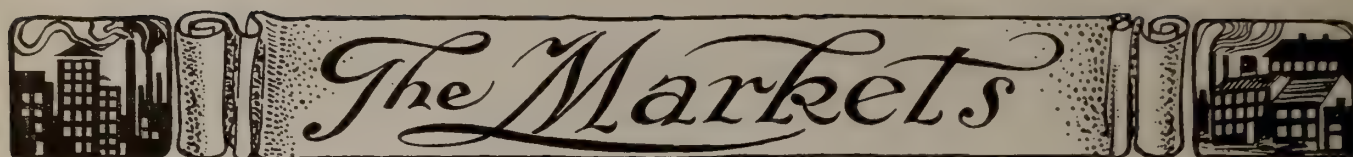
The machinery and equipment of Benjamin Pearce, envelope manufacturer, 350 Adelaide St. West, Toronto, who recently made an assignment to Charles A. Hendry, was sold by public auction at Suckling and Co.'s, Toronto, on March 15. The purchase price was \$1,250, and it is understood that arrangements are being made whereby Mr. Pearce will resume business.

A large board mill have notified their customers that all orders will be received and entered to be billed at the ruling prices when the order is filled. Owing to the scarcity and constantly increasing price of rags and other materials used in their boards, as well as the large quantity of orders now on hand, they are obliged to adopt this rule.

Joseph Lawson, formerly of the firm of Lawson and Wilson, book binders, 22 Lombard street, Toronto, has enlisted for foreign service and is now Captain and Paymaster in the 204th Battalion, Toronto, which is being recruited under Lieut.-Col. Price.

The Interlake Tissue Mills, Merritton, Ont., state that, owing to continued advances in the cost of raw materials, they are compelled to withdraw all quotations on the various grades of paper and paper specialties manufactured by them, and add; "As you are doubtless aware, there is a great deal of uncertainty to the present market on all our raw materials, but we shall endeavor to quote you as low a price as possible on any of our products you may need."

The Howard Smith Paper Mills, Montreal, have issued notices to the trade that, owing to the shortage of raw materials, they can only book orders subject to the fluctuation in supplies and the ability of the company to procure the same, and that all orders will be charged at the ruling price prevailing on date of shipment.



The Markets

CANADIAN MARKETS

Toronto, March 28.

The scarcity of raw materials in the paper manufacturing line is the absorbing topic of the trade, and next to that comes the question of prices and of filling orders, which, in their volume, show no falling off. There is possibly not a mill in any line but what has a great deal more business than it can do, and many have orders booked ahead for three and four months. It is not safe to quote definite prices on any grade of paper, for they are changing almost every day, and the height, which some paper making commodities will reach, is impossible to forecast. In fact, all plants have practically withdrawn prices, and will take orders for paper to-day subject to delivery, say, two or three months' hence, at the figure then prevailing.

No mill will cover any future delivery at present quotations, and if the purchaser insists on such a protection, why, his order is turned down without any regret or question. The mills do not have to look for business, as more business is coming their way than they can possibly handle, and several sales managers have gone on a holiday in order to escape importunities for more goods and quicker deliveries. The work of a sales manager is practically done when he sells the output of his mill for some months ahead. Most of them believe in taking a vacation while they can, for they do not know how long the present stirring state of affairs will continue, and there is the bugbear of securing raw materials, which is looming up darker and darker all the time.

All sorts of expedients are being resorted to in mixing raw stock to make the different grades of paper. The advance in book and ledger stock has been tremendous, and, as the shortage is emphasized from day to day, the price ascends. While consumers in all lines of paper are asked to pay more money, and writing papers and book papers have advanced twice since the first of the year, wrappings three times, and kraft four times, the end is not yet, and the apex has by no means been reached. As stocks of paper have been low, this has caused all users to rush in at once and place orders without limit. The country is being scoured for paper making ingredients, and the demand being much greater than supply, prices ascend steadily.

In newsprint, orders are being turned down on all sides, and on all new contracts the price is being raised from one-eighth to one-quarter of a cent. Where only a few hundred tons are required for customers, who are not on contract, or renewing one, as high a figure as \$2.40 has been obtained at the mill for rolls, and \$2.50 for sheets. If deliveries are made to the United States at a figure above \$25 per ton, the product becomes dutiable, and this is the border line in quotations at present.

A leading sales manager stated that about 1,700 tons were now being shipped daily in print paper from Canada to the United States. The new machine of the Belgo-Canadian Pulp and Paper Co. is now in operation, and the Laurentide Co. are taking steps to double their output by the erection of another mill with a

capacity of two hundred tons per day. The Donnacoma Paper Co. will likely instal another machine, and several other propositions are heard of.

One selling agency, which controls the production of nearly seven hundred tons a day in Canada, report that they are only looking after what contracts they have in hand, and are refusing orders for new business right and left. What makes the lot of the print paper producer a hard one is the advance in felts, copper wire, coal and other requisites. Then the labor situation is becoming acute, as so many employes have left for the front and, when the lumberjacks, who are mostly single men, come out of the woods, it is anticipated that many will join the Foresters' Battalion for service in England. Canadian plants may be forced to go across the line to Michigan and Minnesota for help next winter in order to get out supplies. This is likely to raise the figure for pulp wood. A large number of publishers of country weeklies are meeting the predicament by increasing the cost of their publications to one dollar and a half a year, and subscribers are willingly paying this sum.

In the sulphite arena, prices are aeroplaning, and as high as \$65 and even more is being obtained for easy bleaching on export orders, although the prevailing quotation to contract customers is about \$60 to \$62 at the mill. All plants have very low stocks on hand, and one of the largest has production sold up until the end of April. Bleached sulphite is bringing as high as \$110 at the mill, with little or none to sell.

Ground wood, in sympathy with other commodities, and the fact that a number of book mills are using this product in a much larger percentage, is going up and was sold this week in Michigan as high as \$25 and \$26 delivered, which is a top-notch mark.

One leading paper mill agent received an order during the past week from an Old Country firm for several hundred tons of writing paper, but had to cable back that he could not get a plant in Canada to take aboard the business. The reason is that local mills are not only filled up, but do not know where they are going to secure materials. Coated paper mills find it exceedingly difficult to get the raw stock, and prices were advanced half a cent all around a few days ago. No. 1 is now quoted at 8¾ cents, No. 2 at 7¾ cents, and No. 3 at 7 cents. Tinted book is 8½, white suede book 10, India suede book 11, gray 11½, and all in one ton lots or over. All prices are subject to change without notice, as warranted by future conditions.

Wrapping papers have gone up from one-eighth to a quarter of a cent, and the following price list has been issued to jobbers and on mill orders.

	Jobbers.	Mill orders.	Stock.
Grey Rag . . .	\$2.60	\$2.75	\$3.00
Dia. Man. . . .	3.00	3.25	3.50
No. 2 Manila . .	3.35	3.50	3.75
No. 1 Manila . .	4.00	4.25	4.50
Fibre (light) . .	4.00	4.25	4.50
Fibre (heavy) . .	4.20	4.50	4.75
Env. Manila . .	4.00	4.25	4.50
Tag.	3.75	4.00	4.50

All grades of kraft took another advance during the past week, largely owing to the high prices prevailing across the line, and the advance averages 80c. a hundred. Toilet and tissues have undergone another raise of about 5 per cent on most lines. A great many of these increases are caused by heavy export trade.

There has been an elevation of about 15 per cent on all kinds of board, and plants will take orders subject to delivery in two to four months, and then only at the figure then existing. Paper boxes of every kind are in good demand, and board mills and box industries are running full.

In the rag and paper stock market, folded news and mixed papers are going up steadily, and the supply is not equal to the demand. The Red Cross Society in Hamilton is inducing the children to bring waste paper to the schools every morning, and a handsome revenue will result to the Society's funds. One leading waste paper dealer stated this week that, while he had been exporting from 50 to 75 per cent of his supply, he was not now exporting more than 25 per cent, so great are the requirements at home. Krafts and white havings are arriving at famine prices, while the jump in ledger and book stock has been a tremendous one during the past few days, and the termination of the scarcity is not yet. Manilas are in urgent demand, and the market for all kinds of cotton rags and roofing stock is stiffening the while. Third and blues have been augmented from 50 to 75 cents a hundred.

The dye situation is exceedingly serious, and fabulous sums are being paid. The greatest scarcity is in blue and red, and street car tickets in a number of cities, which were previously printed on colored board, are now coated with printing ink on both sides, making three runs on the presses instead of one as formerly. It may be stated that the lot of the paper maker is not a particularly happy one just now, for while all prices have soared, the increase has not been commensurate with what raw stock is costing him, and capacity output does not bring him much profit when the worry of securing requirements, the labor shortage and meeting the exacting demands of customers, some of them most unreasonable, are taken into consideration.

The imports of paper in the Dominion for the calendar year, 1915, show a considerable falling off which is due to several causes, one being the scarcity of bottoms to carry cargoes, and the other is that a number of Canadian plants are now making papers which, before the war, were imported largely from Europe. Among these may be mentioned greaseproof, glassine, art, manifold, onion skins, heavy ledgers, imported writings, tissues and toilets, linen finish and crash cover papers, etc. The decline amounts to nearly two million dollars. In the calendar year 1915, the imports were \$4,523,067, while the imports in 1914 were \$6,426,505, of which \$3,455,095 came from United States.

The export business has shown a gratifying increase, mounting in 1915 to \$18,452,708 as compared with \$15,118,138 in 1914. Of this amount in 1915 United States took \$15,423,171. The export of pulp wood was about the same, in 1915 being \$6,164,113, and in 1914, \$6,680,490, all going to United States. The exports of pulp show an increase being \$9,279,414 in 1915, and in 1914, \$8,865,486, of which United States got \$8,357,747. A leading blotting paper concern, from whom many Canadian customers have bought in the past, send out notices that, owing to the increasing cost of raw ma-

terials used in the manufacture of such papers and the enormous proportions which such costs have reached, they again find it necessary to make further changes in their prices on all grades of blotting papers. The advance is one and two cents per pound. The company also state that it will be impossible to protect orders in transit, and if customers do not wish such orders filled at advanced prices, they are requested to advise them at once.

"Yes," remarked a leading member of the trade, the cost of all raw materials has been constantly advancing and also the cost of all supplies going into the upkeep of paper machines and mills, even to twines and wrappers, and the labor situation is becoming acute. All mills are working to capacity and, in spite of the augmentation in figures for paper, no one has been hurt. As a matter of fact, when you consider the labor and technical work put on the production of a sheet of paper, its cheapness is apparent."

Toronto quotations are:—

Paper.

News (rolls), \$2.15 up, at mill, in carload lots.
News (sheets), \$2.30 up, at mill, in carload lots.
Book papers (carload), No. 3, 5.00c.
Book papers (ton lots), No. 3, 5.00c to 6.00c.
Book papers (carload), No. 2, 5.50c to 6.25c.
Book papers (ton lots), No. 2, 6.00c to 6.50c.
Book papers (carload), No. 1, 6.25c to 6.75c.
Book papers (ton lots), No. 1, 6.50c. up.
Sulphite bonds, 6½ to 8c.
Writings, 6c. up.
Grey Browns, \$2.75 to \$3.50.
Fibre, \$4.25 to \$5.50.
Manila, B., \$3.25 to \$4.50.
Manila No. 1, \$4.25 to \$5.50.
Manila No. 2, \$3.50 to \$4.50.
Unglazed Kraft, \$6.00 to \$7.50.
Glazed Kraft, \$6.50 to \$8.00.
Tissues, bleached, 75c to 1.25c.
Tissues, unbleached, 55c to 85c.
Natural greaseproof, 8½c to 10½c.
Bleached parchymns, 23c to 30c.
Drug papers, whites and tints, 5½c to 7½c.
Paper baks, Manila, 50, 10 and 5 discount.
Paper bags, kraft, 40 and 5 discount.

Pulp.

Ground wood pulp (at mill), \$17 to \$19.
Ground wood, \$20 to \$25, delivered.
Easy Bleaching Sulphite, 60 to \$65, del. in Canada.
Easy Bleaching Sulphite, \$65 up, delivered in U. S.
Sulphite, news grade, \$53 up, delivered.
Sulphite (bleached), delivered, \$1.10 up.
Sulphite, delivered, \$55 up.

Paper Stock.

White envelope cuttings, \$3.00.
No. 1 soft white shavings, \$2.50.
White blanks, \$1.25.
No. 1 book stock, \$1.70.
No. 2 book stock, \$1.60.
Ordinary ledger stock, \$1.90.
Heavy ledger stock, \$2.25.
No. 1 Manila envelope cuttings, \$1.75.
No. 1 Manila envelope cuttings, \$1.75.
No. 1 print Manilas, 87½c.
Folded News, 70c.
Over Issues, 70.
Old white cotton, \$4.00.
No. 1 cleaned mixed paper, 52½c to 55c.

- No. 1 white shirt cuttings, \$7.00.
- Black overall cutting \$2.50.
- Thirds, blues, \$2.75.
- Black linings, \$2.25.
- New linings, flannelettes, \$4.50.
- Ordinary satinetts, \$2.25.
- Flock, \$2.40.
- Sailor rags, \$2.25.
- Blue Overall cutting, \$4.25.
- Manila rope, \$4.00.
- No. 1 burlap bagging, \$3.25.

Quotations f.o.b. Montreal are as follows:—
Book—News—Writing and Posters.
Roll News, \$40 to \$43 per ton for large orders; \$50 per ton for small orders.
Ream News, \$45 to \$47 per ton for large orders: \$55 to \$60 per ton for small orders.
No. 1 Book, 5³/₄c to 6c.
No. 2 Book, S.C., \$5.00 in large quantities; \$5.50 in small quantities.
No. 3 Book, M.F., \$4.50 in large quantities; \$4.75 in small quantities.
Writings, 5¹/₂ to 7¹/₂c.
Sulphite Bond, 6¹/₂c to 8¹/₂c.
Writing Manila, 5c to 5¹/₂c.
Cover Papers, 6¹/₂ to 10c per lb., according to colors wanted.
Colored Posters, 5¹/₂ to 6¹/₂.

An extra charge of 10c per 100 lbs. will be made when Book and Writings are packed in frames, and 15c per 100 lbs when packed in cases.

Prices on wrappings now in effect:—

	Carload	Five	Two	One	Under
	& Jobbers.	tons.	tons.	ton.	1 ton.
Cleaver, per 100 lbs.	2.35	2.45	2.55	2.65	2.75
B. Manila, do.	2.75	2.95	3.05	3.15	3.25
Samson B., do.	3.35	3.45	3.55	3.65	4.00
No. 1 Manila, do.	3.75	3.85	3.95	4.05	4.15
No. 2 Manila, do.	3.10	3.20	3.30	3.40	3.50
Invincible Striped Man., do.,	3.75	3.85	3.95	4.05	4.15
Fibre	3.75	3.85	3.95	4.05	4.15

Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.

NEW YORK MARKETS.

(Special to Pulp & Paper Magazine.)
New York, March 25, 1916.

While quotations in ground wood pulp have not advanced within the past few weeks, they have become much firmer. The inquiry for stock is reported to be getting more brisk. The grinders throughout the State are operating at a good capacity, and even such idle machines which have recently been started up are running full. Opinon seems to agree that the prospects of the market are very encouraging. It is undoubted that the consumption of ground wood is now greater than it has been in many years. Not only are the paper machines extremely busy, but, for economic reasons, many manufacturers have been trying to use larger quantities of ground wood in the making of this paper than they have done hitherto. This, added to the fact that many paper mills, which have means of supplying their own pulp wants, are unable to take care of their own requirements, makes it seem that

the market must assume very active proportions in the near future.

The steady demand for both prompt and forward delivery continues, despite the firm undertone which the market has maintained for chemical pulp for some time. The tense situation existing abroad as regards the shipment of stocks from Scandinavia is a dominating factor, and even the poorer grades of strong unbleached qualities are being freely absorbed by domestic consumers. An interview with a pulp importer who has just returned from Sweden after a nine months' stay, reveals the fact that the prospects for the market easing when navigation on the Baltic Sea opens, are very slim. According to this party, the foreign pulp mills are operating as well as they can, under the various difficulties which are confronting them. Coal is hard to obtain, and is exceedingly costly. Sulphur, too, is a cause for much complaint, owing to its shortage. While prices are very high here, higher figures are being paid abroad. This gives the impression that when the mills are able to ship pulp, the European market will get the largest portion. It was suggested that if England maintained its importation restriction on pulp, Sweden would have a big surplus on hand, because of the fact that practically over 90 per cent of the pulp consumed in England came from Scandinavia. However, general opinion is that the foreign demand will speedily dispose of this "surplus," and that the American market will not derive any advantage from it. That our relations with Canada will be much closer in the future seems assured. The imports of all grades of chemical pulp from Canada have been greatly increased. Just now there is a market in the United States for all of the pulp which Canada can export. Kraft paper is very hard to obtain. The quantities of available stock on docks are very small—smaller than is generally realized—while imports are in negligible quantities. Domestic mills have little, if any stock to offer. Quotations now range as high as \$80 a ton for limited quantities. Bleached sulphite is exceedingly firm. Buying is reported on a very close scale. It is understood that sales have actually been made at \$110 a ton. Prospects are that this market will advance still further, owing to the scarcity of stock. Unbleached sulphite is stronger now than ever before. A good demand is current, but prices are so high that mills can only buy to meet their immediate requirements. Sales have been recorded at \$65 a ton. It seems strange that easy bleaching should not be in great demand at this particular time, but such is actually the case. The market for easy bleaching now ranges as high as \$72 a ton.

Without doubt, the situation in rags is now more acute than it has ever been in the history of the industry. Conditions have reached the stage where it has become necessary for the United States Government to issue an appeal to the housewives of the country, asking them to save their rags and waste papers, so that the paper mills might find it possible to get sufficient supplies to maintain their continuity of operation. This movement has been actually compelled because of the fact that imports from abroad have decreased to such an extent as to cause an unusual shortage of available stock in this country. Within the past few weeks, the demand for rags has become very great, and prices have advanced incredibly. It is remarkable the way the market has been acting. Dealers, more than the others, realize how great is the shortage of stock, and are trading heavily among themselves. The demand

for white cuttings has been stimulated and accelerated by the difficulty in getting bleaching powders. On this account, they are compelled to seek white stock, in order to avoid bleaching. Also because many mills have been forced to substitute white cotton stock for linen rags. Prices as high as 12½c have been paid for No. 1 new white cuttings, and from present appearances this stock will rise much higher. The demand for roofing is as strong as it has been during the past few months. Supplies are so short that practically no limit is placed on the price of stock. No. 1 roofing rags have been sold for 4c, and the prospects are that the market will continue to advance. As has been explained in previous issues, the price of the grades, such as black stockings, thirds and blues, and soiled whites are dependent on the quotations for roofing and must always be a trifle more costly than roofing stock, otherwise they are thrown in with roofing. Thirds and blues are to-day held for at least 5¼c; street soiled whites are to be had for about 5¼c; house soiled whites are held for 7c, while old white cottons, No. 1, are being sold as high as 8½c. For the immediate future, supplies for this market will depend, to a great extent, on the success of the government's movement to gather in rags and waste papers. France has placed an embargo on the exports of rags, while England is firmly maintaining her embargo on linen and cotton rags. From the other parts of Europe comparatively little can be secured at this time.

The same conditions which exist in the rag market also hold good for bagging. All grades of bagging are in splendid demand, but there is a general shortage of supplies. Gunny has now reached the 3¾c mark. Bright bagging is active at 3¼c; sound bagging is held for 3½c; mixed bagging is firm at 3½c. Rope has been advancing rapidly, sales having already been reported at 7c—an absolutely unprecedented record.

In waste papers, the market seems to grow more exciting and conditions seem to become more acute from day to day. The board mills of the country are flooded with business, and their need of raw stock is unusually large and urgent. However, supplies are so scarce that several mill owners report that they will have to shut down unless conditions ease up. To make matters worse, the demand from rag and sulphite mills for hard whites and soft white shavings has grown tremendously. Hard whites have been sold for 3¾c, while soft whites are held at higher than 3c. The demand for krafts is still somewhat vigorous, 3c having already been paid for limited quantities. Book stock is being eagerly sought at above 2c, while ledger is being eagerly sought at above 2c, while ledger and flat stock are equally active. Old newspapers of all grades are remarkably firm, strictly over-issues cannot be had for less than 70c. Mixed papers have been sold as high as 60c. It seems that waste papers will become practically unobtainable unless some relief is brought to the market soon.

The conditions in the paper market are to-day most trying for jobbers. Prices are advanced continuously without notice, and all quotations are subject only to immediate acceptance. Some papers, kraft, for example, are practically unobtainable. It is doubtful whether any of the American kraft mills are taking business. The fact is that a prominent New York City jobber states that he wrote to every kraft mill in the United States, and that none would quote him. One

manufacturer reported that he was "filled with orders" ahead until December. However, the general disposition is not to accept orders for delivery far ahead. Paper makers are in a dilemma, owing to the constantly advancing costs of raw materials and fear to accept business, because, in the meantime, the costs of manufacturing will surely have increased. When it is understood that most of the mills are buying raw stock on a "week-to-week" basis, the importance of this fact can easily be recognized. Also, the freight congestion is causing much annoyance. The movement of raw materials is often so slow that mills are forced to shut down pending their arrivals.

While news print contracts are being taken care of, there is practically no stock available for transient trade. The president of one of the largest news manufacturing companies in this country, admitted that, despite the great increase in the cost of manufacturing, his concern had renewed many contracts at only a little advance over the old figures. This attitude seems to be general in news print, and is probably due to a fear that, if prices are advanced materially, the publishers may become interested in some of the tidewater propositions which are now being projected. Wrappings of all kinds are hard to obtain for most of the mills have been compelled to withdraw from the markets. Manilas and fibres are both high. Krafts have been sold as high as 8c per pound. Tissues have advanced beyond credibility. Pure white tissues have been sold for 80c, White Manilas and poorer grades of white tissues are held at about 60c. In book papers, the market is very active. Because of the freight troubles, publishers have been buying ahead in large quantities. Boards have advanced remarkably and are now being sold to the highest bidders.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$22.00 to \$24.00.
Ground Wood No. 2, \$18.00 to \$22.00.
Unbleached Sulphite, dom., 3 to 3¼c, delivered.
Easy bleaching impt., 3.25 to 3.65c, ex-dock, N.Y.
Bleached Sulphate, impt., 4c, ex-dock, N.Y.
Bleached Sulphite, impt., 5 to 6c, ex-dock, N.Y.
Unbleached Sulphite, impt., 3.10 to 3.35c, ex-dock, New York.
Kraft Pulp, impt., 3.65 to 4c.

Paper.

News, Rolls, transient business, 2½c and higher.
News, Sheets, \$2.30 to \$2.45, f.o.b.
News, Rolls, contract renewals, \$2.20 to \$2.50, f.o.b.
News, side runs, \$2.25 f.o.b.
Book papers, car lots, S. & S. C., \$60 to \$65, f.o.b.
Writing paper, extra superfine, 14c. to 17c., del. east of Miss. River.
Writing paper, superfine, 13 to 15c, del. east Miss. R.
Writing paper, No. 1 fine, 10c, del. east Miss. River.
Writing paper, No. 2, fine, 9½c, del. east Miss. River.
Writing paper, engine sized, 7½ to 11c, east Miss. R.
Bond paper, 6½c to 24c, delivered east of Miss. R.
Ledger paper, 6½c to 25c, delivered east of Miss. R.
Linen paper, 9c to 18c, delivered east of Miss River.
Manila jute, 6c, delivered.
Manila, wood, 4½c, delivered.
Kraft No. 1 (dom.), 7½c, f.o.b., New York.
Kraft, No 2 (dom.), 5½c, f.o.b., New York.
Kraft, imported, 7½c, ex-dock, New York.

Boxboards, news, \$47.50 per ton, delivered.
 Wood pulp board, \$50 per ton, delivered.
 Boxboards, straw, \$41 per ton, delivered.
 Boxboards, chip, \$45 per ton, delivered.
 Tissue, fourdrinier, 65c, f.o.b., New York.
 Tissue, white, cylinder, 70c, f.o.b., New York.

Riordon Pulp and Paper Co.

Very satisfactory reports were presented at the annual meeting of the Riordon Pulp and Paper Company, held here a few days ago.

Net profits of the Riordon Pulp and Paper Company for the year ending December 31, amounted to \$292,558, as compared with \$247,078 last year, an increase of \$45,480. Total profits for the year were \$427,049, an increase of \$51,187, but \$69,862 was written off for depreciation, as against \$65,951 the previous year. Interest charges were also about \$2,000 heavier.

The earning statement compares with 1914 as follows:—

	1915.	1914.
Profits for year	\$427,049	\$375,862
Depreciation	69,862	65,951
Interest charges	64,628	62,832

Net profits	\$292,558	\$247,078
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The balance sheet gives total assets as \$8,935,076, the most important change being the improved cash position of the company, the cash on hand increasing from \$40,909 a year ago to \$138,701. Accounts receivable also show a good advance. Current liabilities have been reduced about \$90,000.

The following statement shows the comparison for two years:

Assets.		
	1915.	1914.
Timber limits and machinery	\$6,870,887	\$6,783,762
Investments	48,325	48,075
Current assets:		
Inventories of logs	1,456,871	1,591,761
Cash	138,701	40,903
Accounts Rec.	386,016	249,442
	\$1,981,589	\$1,927,108
Ins. paid in advance	34,274	11,009
	\$8,935,076	\$8,859,956
Liabilities.		
	1915.	1914.
Capital stock	\$5,500,000	\$5,500,000
Sinking fund debts	1,533,000	1,500,000
Current liabilities:		
Bank loans	889,860	886,343
Accounts payable	257,588	363,686
Bills payable	80,465	70,214
Accrued liabilities	43,015	39,818
	\$1,270,929	\$1,360,063
Surplus profits	536,938	404,380
Bond interest	91,304	90,000
Dividend on preferred	70,000	70,000
Bills under ids.	205,217	180,578
	\$8,935,076	\$8,859,956

Mr. C. Riordon, president, in his remarks to the shareholders, says, in part:—

The money which the company have been spending the last two years on improvements at Hawkesbury has resulted in the reduction of the cost of manufacture and an increased output, states C. Riordon, president of the company. This has helped materially, in spite of the unusually low prices prevailing during the greater part of 1915, in making larger profits, and the effect of these improvements will be shown, the directors think, in a material increase in profits during the present year. A substantial part of the company's output both in pulp and lumber to be manufactured during the present year has been sold at good prices, and the outlook for the sale of the balance of the company's product at satisfactory prices is good.

Arrangements have been made for the installation of a bleaching plant at the company's mill, Merritton, Ontario, which should be in operation about July 1 next. The intention is to bleach the whole of the sulphite pulp produced at this mill, which will give the company a wider field in which to market this pulp. The company's assets total \$8,935,076.

PAPER MAKER DIES.

Mr. Robert Davies, president of the Don Valley Paper Company, Ltd., has just died after a lengthy illness.

Mr. Davies, who was born in Davisville, received his early education at Upper Canada College. His first business venture was in partnership in the Don Brewing Company, from 1872 to 1877. The next year he founded the Dominion Brewing Company, which he continued until 1900, when he sold to an English syndicate. He then turned his attention to the brick plant of Taylor Brothers, in the Don Valley, which he purchased outright in 1901. Seven years later he purchased the paper mills of Taylor Brothers, a short distance from the brick yards, which he incorporated as the Don Valley Paper Company, Ltd., of which he was president at the time of his death.

PATRIOTIC LUMBERMEN.

At a meeting of the Mountain Lumber Manufacturers' Association held recently in Calgary, a resolution was adopted that all members of the association contribute fifty per cent of their net profits to the Federal Government for patriotic purposes.

Another resolution recommended to the members that every lumber manufacturer collect one dollar per head from each unmarried employe for patriotic purposes, unmarried employes not consenting to this arrangement to be dismissed.

SCANDINAVIAN EXPORTS OF PULP.

The United States Department of State is informed that Sweden will grant special permission for exportation of chemical wood pulp in cases where the pulp is to be used exclusively in the United States. There is no embargo on exports of pulp from Norway to the United States.

HUNGARY SHORT OF PAPER.

The Hungarian government has issued a decree requiring reports of all stocks of newsprint paper on hand, which is placed under government control.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Air Compressors:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Digester Lining:

Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Drainer Bottoms:

Snell, Samuel, Co., Holyoke, Mass.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Mass.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Fricion Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 Crookes, Roberts & Co., Sheffield, Eng.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
 Carthage Machine Co., Carthage, N.Y.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Norwood Engineering Co., Cowansville, P.Q.
 Progress Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Cap. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada.

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Fox, Stockell & Co., London, England.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

MILL SUPPLIES---Continued

Draw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Draw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Drawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Duff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Injection Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.
Process Engineers, Ltd., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Sinks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones & Glassco, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Canada.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Round Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Booth, J. R. Ottawa, Ont.
Bronson Co., Ltd., Ottawa, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Chicoutimi Pulp Co., Chicoutimi, Que.
Davy, James, Thorold, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
MacLaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Pulp Co., Campbellford, Ont.
Ontario Paper Company, Thorold, Ont.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Bathurst Lumber Co., Limited, Bathurst, N.B.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Mills:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritt, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Directors' Board:

McArthur, Alex & Co., Montreal, Que.

Printing:

Canada Paper Co., Montreal.

One:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B. Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Tees & Persse.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Tees & Persse.

VANCOUVER, B.C.:

Brake, Crendon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

PORT ARTHUR, ONT.:

Tees & Persse.

TORONTO, ONT.:

Barber-Ellis Co., Ltd., 71 Wellington Street W.
Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

MONTREAL, QUE.:

Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill.
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.

QUEBEC, QUE.:

Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

FOREIGN:

Salomon & Co., Felix, New York City.
Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., England.
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York.
Scandinavian American Trading Co., New York, N.Y.

WANT AND FOR SALE

ASSISTANT CHEMIST WANTED for Sulphate Pulp Mill—night work only. State experience and salary expected. Address Chemist, c.o. Pulp and Paper Magazine, 35-45 St. Alexander St., Montreal.

WANTED—Two first-class second hands and two first-class winder boys on cylinder machine making wood pulp board. Nothing but first-class, and steady, need apply. Address, "First-Class," c.o. Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal.

POSITION WANTED—"Backtender," 23, wishes position on fast news, where steadiness and ambition are rewarded. Apply Box 112, Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal.

WANTED GOOD BEATER MAN used to Common Grades of Wrapping papers and Kraft Stocks, For Mill in Canada, Country district. Cheap rent about \$4.00 per month. Board in Comparison. Apply stating salary required to Beatman, Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal.

POSITION WANTED as superintendent of paper and ground wood mill, making news, hanging, bag, manilas, butcher and tablet, have had over ten years' experience running mills on these grades of paper on large and fast machines. Apply Box 111, Pulp & Paper Magazine, 45 St. Alexander St., Montreal.

BRITISH CANADIAN JOBBERS.—Wants samples and best cash prices f.o.b. Montreal or Quebec opening of navigation of all qualities of Paper, Boards, Bags and Pulp. Also particulars of tonnage available next six months. Jobs and special lots solicited. Address Export, c-o Pulp and Paper Magazine, 35-45 St. Alexander St., Montreal.

POSITION WANTED by experienced Sulphite Cook, Apply Box 113 Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal, Que.

Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.	13
Albertson, D. J.	64
Ambursen Hydraulic Construction Co., Ltd.	11
Ayers, Ltd.	62

B

Bates & Innes.	68
Bathurst Lumber Company	3
Barker, E. R.	64
Becker & Co.	67
Beloit Iron Works.	14
Bertram, James & Son, Ltd.	10
Bertrams, Ltd.	2
Black-Clawson Co.	6
Boving Hydraulic & Engineering Co. Limited.	6

C

Caldwell, H. W. & Son, Co.	18
Cameron Machine Co.	65
Canadian Boomer and Boschert Press Co.	8
Canadian Fairbanks-Morse Co., Ltd.	10
Canada Paper Co., Limited	66
Canadian Westinghouse Co., Ltd.	13
Capital Wire Cloth Mfg. Co., Ltd.	7
Carthage Machine Co.	16
Chambers, Ltd.	7
Chicoutimi Pulp Co.	67
China Clay Co.	68
Christie George, Ltd.	6
Churchill & Sim.	62
Crookes, Roberts & Co.	13
Crossley, T. L.	65

D

Darling Bros, Ltd.	6
DeCew, J. A.	65
Dean & Son	
Dominion Belting Co.	65
Dominion Pulp Woods' Limits.	54

E

Eaton & Brownell.	64
The E. B. Eddy Co., Ltd.	66
Emerson Mfg. Co.	9

F

Farrel Foundry & Machine Co.	
J. Ford & Company	

G

Glens Falls Machine Works	6
---------------------------	---

H

Hardy, Geo. F.	64
Hartig, Hugo.	65
Hay Knife Co., Peter, Ltd.	62
Hersey, Milton Co.	65
Hooker Electrochemical Co.	65
Huyck, F. C., Sons.	12

J

Jeffrey Mfg. Co.	14
Jenssen, G. D. & Co.	64
Johnson & Sons, Ltd., C. H.	18
Johnson, Chas.	4
Jones, E. D. & Sons, Co.	17
Jones & Glassco.	

K

Klipstein, A. & Co., Ltd.	7
---------------------------	---

L

Lauderburn, D. E.	64
Lawrence Machine Co.	9
Laurentide Co., Ltd.	63
Little, Arthur D., Inc.	65
Lombard & Co.	

M

Marx, J. & Co.	65
Meincke, G. A. & Co.	68
Moore & White Co.	15

N

National Paper Co.	63
Northern Crane Works, Ltd.	62
Norwood Engineering Co. of Can. Ltd	172

O

Ontario Pulp Wood Limits.	67
Ottawa Car Mfg. Co., Ltd.	9

P

Panzl Digester Lining Co.	7
Paper Makers Chemical Co.	64
Parsons Trading Co.	18
Penmans, Limited.	15
Pickles, W. F.	68
Prather, H. B.	64
Process Engineers, Ltd.	65
Provincial Paper Mills Co., Ltd.	61
Pullan, E.	65
Pulp & Paper Trading Co.	65

R

Rice, Barton & Fales Machine & Iron Co.	16
Riordon Pulp & Paper Co., Ltd.	66
Rolland Paper Co., Ltd.	66

S

Salomon & Co., Felix.	65
Sandy Hill Iron & Brass Works.	17
Schlick, Leo.	64
Scott, Ernest & Co.	
Sherbrooke Machinery Co., Ltd.	5
Smart-Turner Machine Co.	68
Snell, Samuel Co.	62
Spencer, J. H. & Sons.	13
Stancliffe Estates Co., Ltd.	68
Stebbins Engineering & Mfg. Co.	64

T

Taylor, J. A.	
Ticonderoga Machine Works.	6
Tippet, Arthur P. & Co.	13

U

Union Screen Plate Co. of Canada, Ltd.	62
Union Sulphur Co.	18

V

Vera Chemical Co. of Canada, Ltd.	7
Voith, J. M.	12

W

Wallace, Jos. H. & Co.	64
Walmsley, Charles & Co., Ltd.	4
Waterous Engine Works Co., Ltd.	8
Westbye, P. P.	11
Wilson-Paterson Co.	62
Winn & Holland.	62

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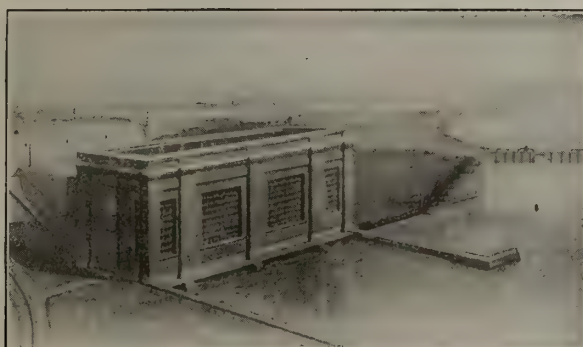
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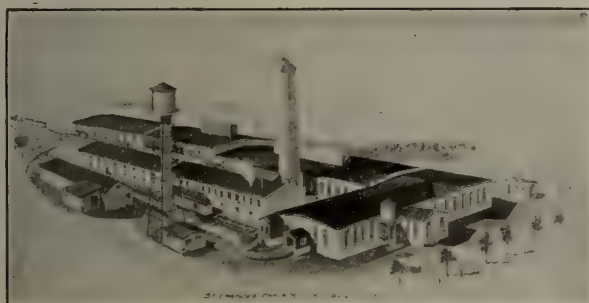
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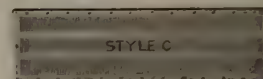
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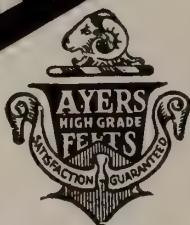
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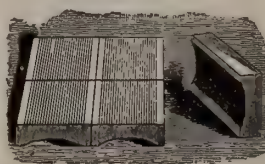
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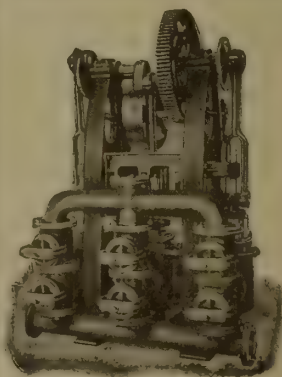


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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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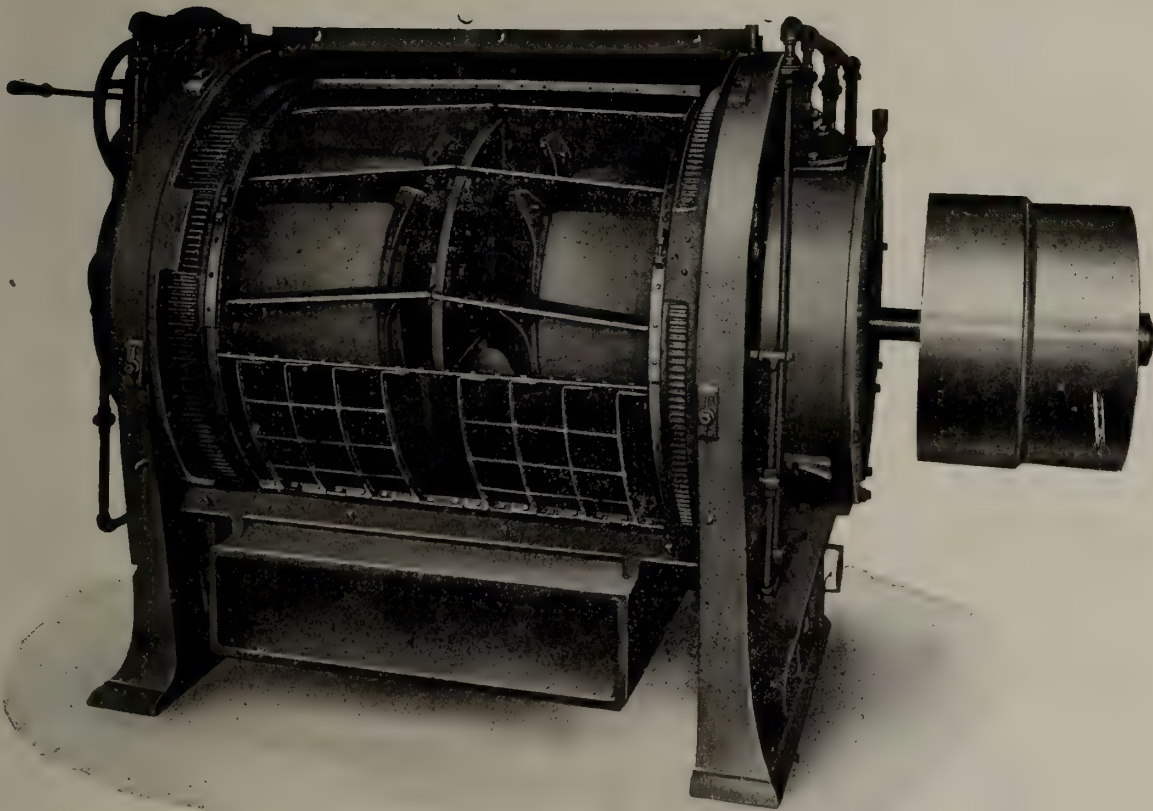
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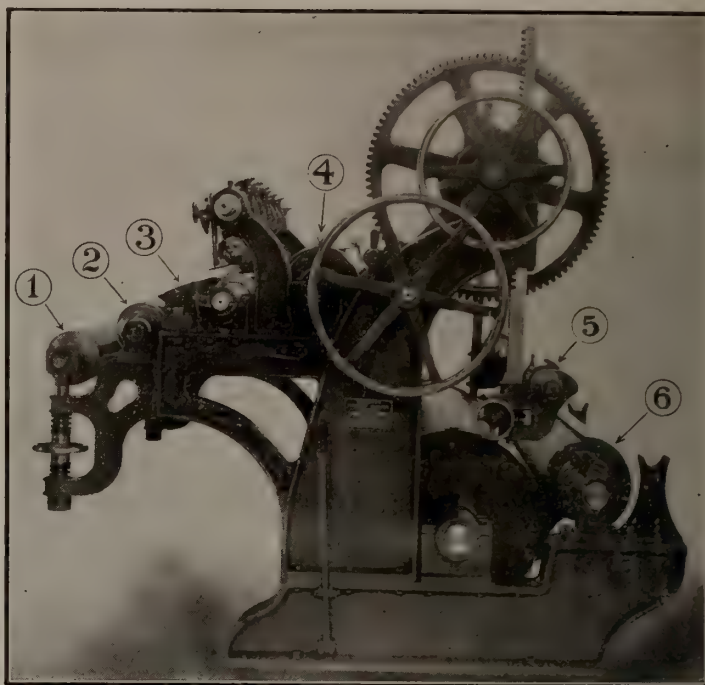
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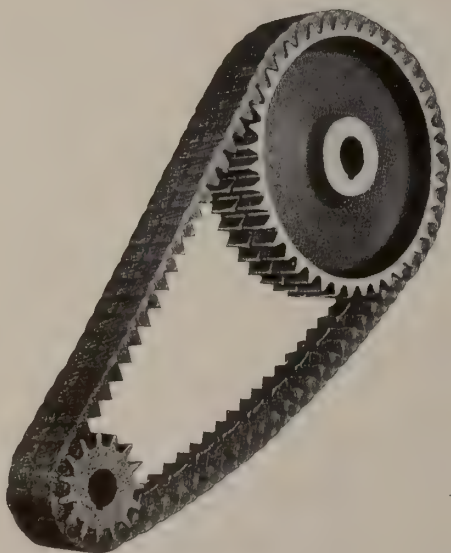
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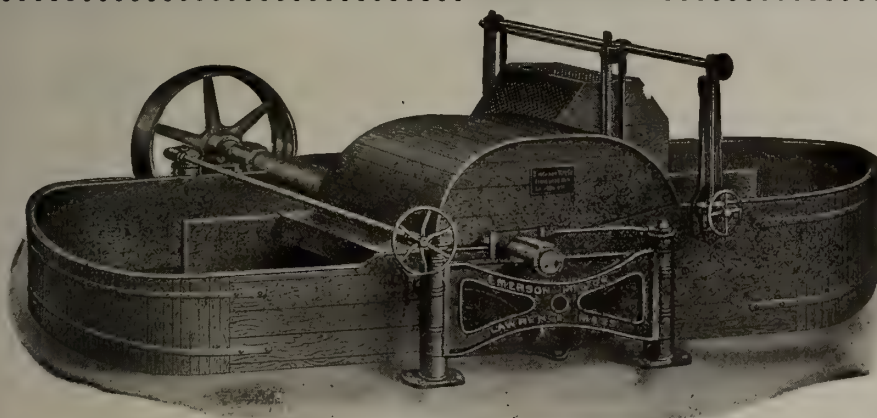
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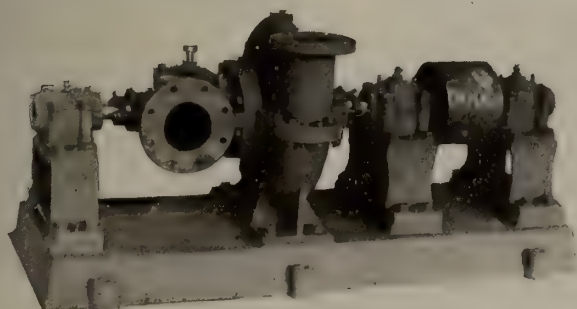
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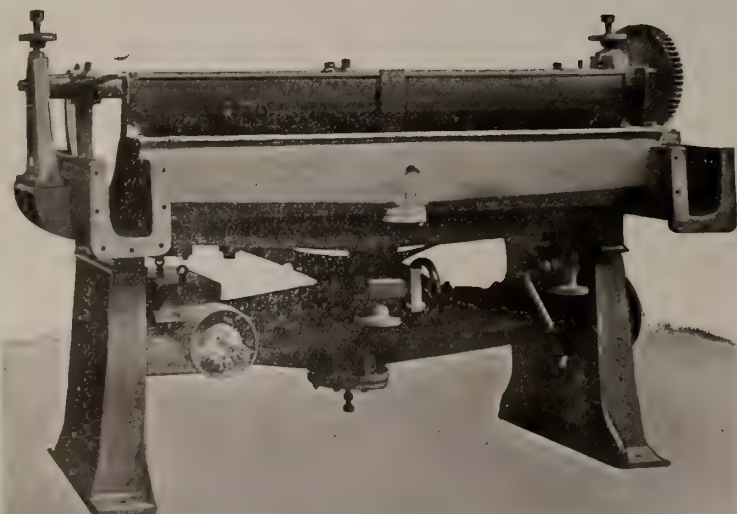
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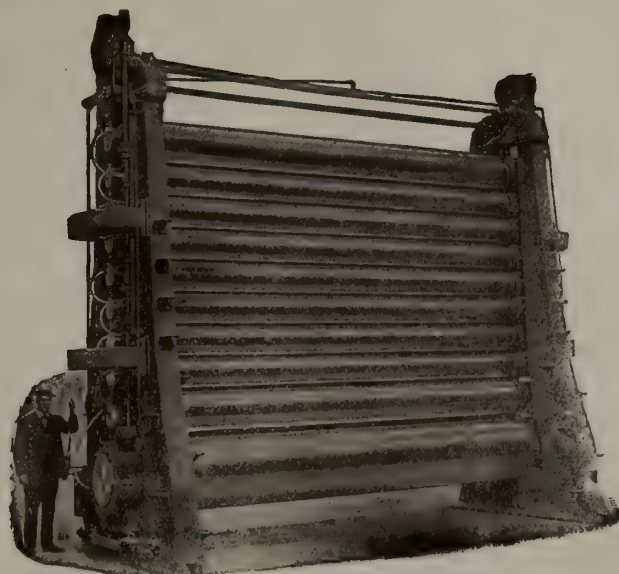
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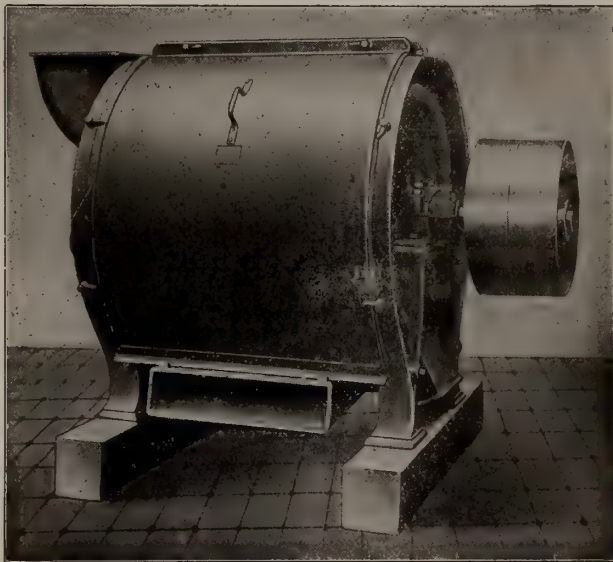
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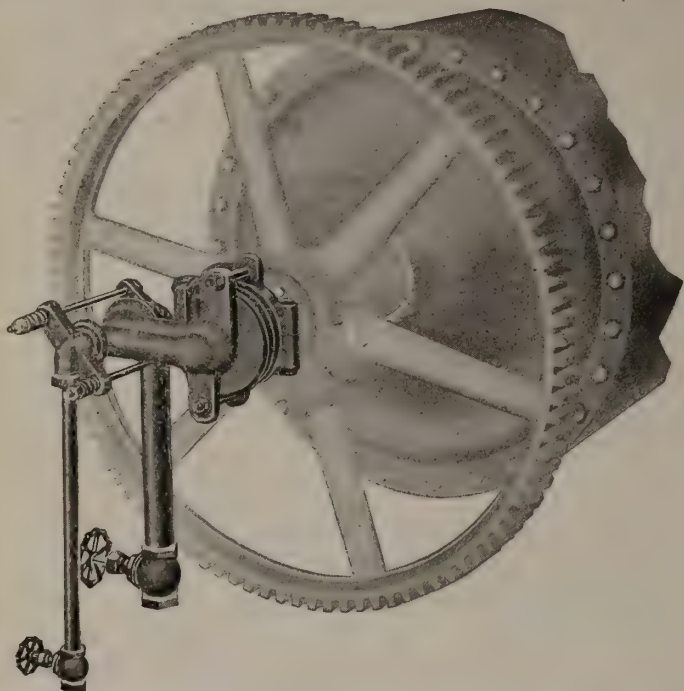
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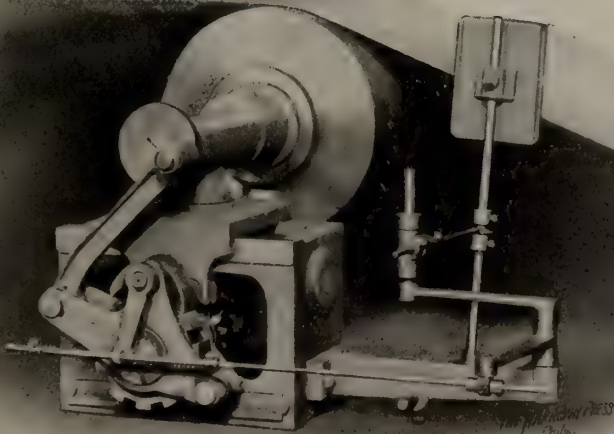
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We highly recommend this type of Wire Guide for Fourdrinier Paper Machines making any kind of paper. We guarantee that it will give longer life to your wires than any other Guide on the market, and can be operated at the lowest possible upkeep expense.

You will note from the illustration that the pawl when engaged in teeth of ratchet wheel, has a full bearing surface, eliminating wear, also eliminates the purchase of many expensive ratchet wheels and pawls used on other types of Wire Guides.

When the wire is running in the centre of machine the pawl cannot transmit any motion to the guide roll. Should the wire travel to the other side of the machine, the positive and quick action of the pawl would immediately cause the Wire Guide to properly align the wire.

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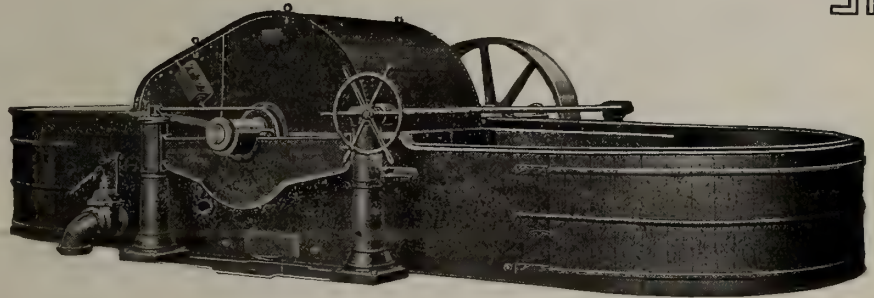
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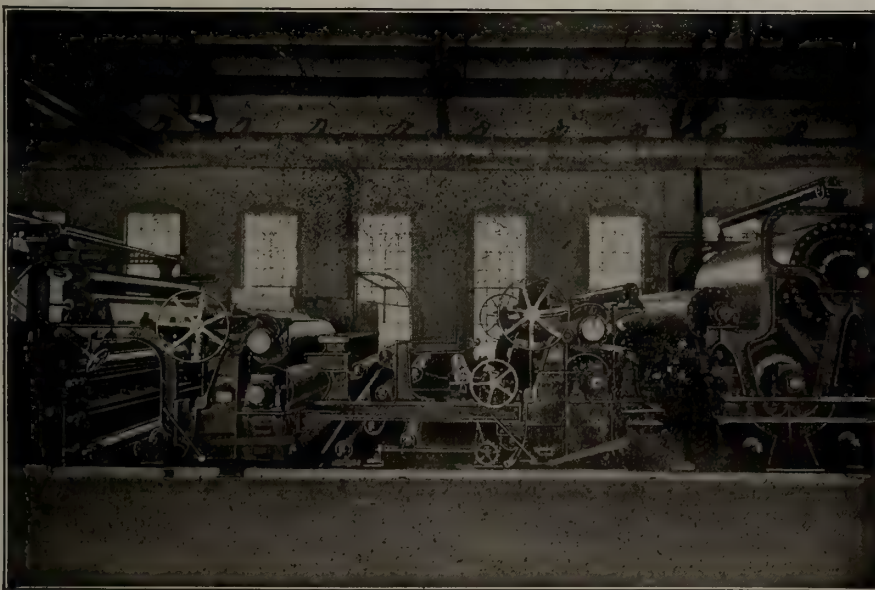
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VOL. XIII.

MONTREAL, APRIL 15, 1916

No. 8

SOLDIERS' PENSIONS.

Those who feel a patriotic thrill—and who does not?—upon reading the long list of names in the Honour Roll of the Pulp and Paper Industry will have warmest sympathy with an appeal which has been made by a special committee of the Council of the Toronto and York County Patriotic Fund Association in the interests of soldiers who have been disabled in the great struggle overseas. Under the heading "A plea for Just Provisions in the Pension Act for Totally or Partially Disabled Canadian Soldiers," the Committee draws attention to the fact that the present classification by the Government Act of wounded soldiers into two classes, "First Degree" and "Second Degree" (the first referring to those who are disabled in actual warfare and the second those who receive injuries in drill, practice or barracks) is unfair and unjust, and is likely to give rise to much heart burning. Further, the scale of pensions as now provided for by the Act makes an allowance to the beneficiaries which is hardly large enough in the case of the rank and file at least, for more than half the necessary expenses of living. The Department of Labour is authority for the statement that a family of five in terms of average prices in sixty cities in Canada for the year 1914 and half of 1915 requires at least \$61.33 per month, with no allowance made for clothing, medical attendance or household furnishing. The present Government pension scheme allows only \$55.33 per month. It is obvious therefore that the soldiers who will return from the front will not have sufficient to keep them if they are totally disabled.

This is a difficulty to which the attention of the Government and the public generally is being drawn by the Committee above mentioned. They propose instead of the present scale which allows from \$264 per annum to a private totally disabled up to \$2,100, to a Brigadier-General, a plan which would give the private \$456 per annum, the sergeant \$516, the Lieuten-

ant \$576 and so on to the Brigadier-General, with \$1,440.

The Committee points out that our expeditionary forces are made up of men drawn from all walks of life, and that there is no professionalism in the army which justifies the very high payments to the higher officers as compared with the men. Social distinctions between privates and commissioned officers are far from being clearly marked or uniform; in fact, brothers, cousins and other close relatives may be widely separated in the service. The Committee therefore proposes that the present Government scale which gives the Colonel five and a half times as much as the private should be distinctly modified.

However, the Committee points out, "Whether the amounts paid are too large or too small, or whether the variations between the ranks are justified or otherwise, it is the underlying principle that is of importance. There is no use and no sense in giving men, so injured that they are incapable of earning a livelihood, a pension so small that it will not afford them the ordinary necessities of life. They will suffer enough as it is; to condemn them also to the miseries of insufficient means is unjust and unnecessary it is uneconomical as well. It must never be forgotten that these men have given up for their country nearly all that makes life worth living. The country in return must treat them fairly—generously, if possible—and this there is no doubt the country is willing to do; but equally there is no doubt that the effort will fail if the Pension Act remains in its present shape."

"We should at once face the fact, that while the burden will be cheerfully undertaken by a grateful country, it will not be a light one. It could not be left to the chances of public appeals from time to time on behalf of men who have established a permanent right to public support. For twenty, thirty, forty, and in some cases, even for fifty years, this support must be given, and it must be drawn from a source absolutely stable and secure."

"SAVE YOUR WASTE PAPER AND RAGS."

The Canadian Department of Trade and Commerce has taken pattern after the United States Secretary of Commerce, and has issued a request that people should save their waste paper and rags. As pulp and paper men know, there is now an acute shortage of the waste materials which enter into the manufacture of paper, and the action of the governments in the United States and Canada in calling upon the people to save their rags and old paper is a belated effort to inculcate the old doctrine of thrift into the people of these countries.

The Canadian Government is also inaugurating a Thrift Campaign, while a year ago we were treated to an Increased Production Campaign. These movements which savour somewhat of paternalism, are the natural outcome of our wasteful methods of doing business, hastened somewhat by the war, but nevertheless inevitable.

It has frequently been pointed out to the people of this continent that we were a wasteful and extravagant lot. Any person who has travelled in Europe is at once struck with the extreme care and thrift shown on that continent. The land is cultivated right up to the edges of the highways. There are no straggling fences with stretches of uncultivated land along the side, but every field and hillside is utilized. In the forests of Continental Europe a man can not cut down a tree without Government license, and even then he is forced to plant another in its place. Even after trees are cut down they are utilized one hundred fold more than they are on this continent. With us, lumbering methods have been most extravagant and wasteful, probably not more than 50 per cent of a tree being utilized, the rest being allowed to go to waste, where it presents an ever-present menace to fire.

We heartily commend to pulp and paper men the circular issued by Sir George E. Foster, and trust that they will co-operate with him in this effort to save waste paper and old rags.

"THE BROADAXE BATTALION."

The lumbermen's battalion which was recruited to over strength in a remarkably short time, recently paraded before the Duke of Connaught armed with axes instead of with rifles and bayonets. This battalion is going to Great Britain to cut timber for the purpose of lining the trenches, building huts and for other purposes.

This battalion promises to be as famous in its way as the Canadian Voyageurs who were recruited in Canada away back a generation ago to accompany the British Relief Expedition up the Nile. The River drivers and Voyageurs rendered splendid service, and made a name for themselves, which is still honored in the annals of the British Empire. At the present time the "Broad Axe Battalion" is going over to attack the forests of Old England, most of which have been un-

touched by the hands of men for a thousand years. It marks an almost revolutionary change in the attitude of Great Britain towards the war. If anyone had suggested two or three years ago that the fine forests and parks which adorned the British Isles would be hewn down by a gang of woodsmen from Canada, and the timber sent across to build trenches and huts for soldiers, he would have been regarded as a lunatic. This is now taking place, and it is a tribute to the wholehearted and efficient manner in which the British are conducting this war to find the Government recruiting men familiar with the work. Canada is glad to send her timber cruisers, and the men who have lain low her giant pines and fir trees. In their battle with the oaks of Old England they will be doing their mite towards the defence of the Empire and the overthrow of the Huns.

ARBOUR DAY.

Arbour Day, with its old time associations, is again approaching. It is doubtful if any day holds a larger place in the affections of the people than this annual tree planting period. Anything which tends to inculcate a love of the beautiful and of nature in the hearts of the younger generation should be encouraged, so the planting of trees and flowers and all the exercises connected with Arbour Day should be encouraged to the fullest possible extent.

Some years ago the Canadian Pacific Railway, sometimes referred to as a soulless corporation, decided to distribute a few flower seeds to the section hands and station agents along its thousands of miles of road. Formerly many of these side stations were almost obscured from view with a litter of junk and debris, the station yard being the favorable receptacle for old cans, scraps of machinery and refuse of every kind. The distribution of the seeds and bulbs and a little encouragement on the part of the Company soon transformed the waste place into veritable gardens. Instead of a section hand's cottage or a station master's premises being littered with refuse they became filled with blooming flowers and well kept lawns. Other benefits were directly traceable to this aesthetic movement on the part of the company. Men who were formerly careless regarding their personal appearance, the appearance and condition of their equipment, and surroundings, became more careful in their habits, with the result that fewer accidents occurred, and a general improvement was noticeable all along the line.

It is not too much to expect that the love of trees and flowers planted in the hearts of the youth of the country through the Arbour Day exercises may be productive of similar results in after years. It is a worthy movement in every particular, one that will bring not only pleasure and happiness to the children and others taking part in it, but will be of untold economic benefit to the country as a whole.

The Honour Roll

Members of the Pulp and Paper Industry who have Enlisted for
Overseas Service

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Utilization of Sulphite Waste Liquor

(Written Specially for the Pulp and Paper Magazine.)

(By JOHN HEDALEN.)

There is hardly any branch of the chemical industries which utilizes its raw materials as incompletely as the pulp mills, since at the most, only 40 per cent of the weight of the timber is converted into cellulose, while a smaller part, principally in the form of bark, is used as fuel and 50 per cent goes in solution in the cooking process and to waste under the name of waste lye. From the structure and content of the wood we have learned that the organic matters thus going to waste have just as great a value as the utilized cellulose. But the loss of these values to the manufacture has not been the only cause for extensive research work on the subject. In many rivers the waste liquor is causing a harmful influence upon the fish life and polluting the river water, making it less serviceable, both for domestic and manufacturing purposes. In Germany, in particular, this question is of vital importance since several mills have been obliged to close down, or transfer their operations because they could not render their waste liquor harmless. Lately several mills had not alternative but to evaporate their lye to avoid paying heavy indemnities. In the United States the same view has been taken, and in the Scandinavian countries it is only a question of time when legislation will take the matter in hand. For a long time attempts have been made to utilize the large quantities of sulphur and still larger quantities of soluble organic compounds in the waste lye and a number of proposals have come forth, but most of the patents have proven of little or no practical value. The fact is that until recently the recovery of these substances has been based upon the evaporation of the water, and since the organic matters are dissolved in a considerable volume it is easy to understand what difficulties such a procedure have encountered. On the other hand the consumption of the products manufactured has been limited compared with the quantities here in question.

In the utilization of the sulphite lye the substances especially throwing obstacles in the way are those required for the removal of the non-cellulose constituents from the wood, namely, sulphurous acid and lime. For certain methods the liquinsulfonic acid is also an obstacle.

The composition of the sulphite lye varies somewhat according to the cooking method and whether direct or indirect steam has been used. On an average it contains:

Sugar (determined as dextrose) ..	15— 25. gpl.
Other organic matters (principally lignin together with small amounts of rosin fat and protein)	75—100 gpl.
Inorganic matters	9— 14 gpl.

Of the solid compounds of the waste sulphite lye the sugar is the only one that has been utilized to advantage. To recover it directly, and together with a part of other of the solid compounds of the lye has been tried, but the procedure has been too complicated and therefore has not led to any practical results. A practical solution of the utilization of the sugar is the manufacture of alcohol. In the removal of the sugar the liquor is thus rendered considerably less harmful, as it

is the dextrose contents in particular which make the lye so injurious, since fermentable sugars form a nutriment to certain algae, thus imparting a taste and smell to the water similar to the one which makes stagnant water so objectionable, while the pentoses are entirely harmless.

All is known the manufacture of alcohol from materials containing cellulose, through hydrolysis with acids—concentrated as well as dilute, has long been practised and under very favorable conditions the manufacture has been remunerative. The use of concentrated acids for this purpose, however, has not proven particularly practicable. Better results have been obtained by dilute acids and a number of methods have been proposed. By the conversion to sugar of wood or sawdust with from 0.2 to 2. per cent sulphuric acid at 120 to 180 deg. C. and a cooking time of from 10 to 30 min. Approximately 25 per cent sugar (determined by reduction) is obtained with about 8.5 per cent alcohol, figured on the dry weight of the wood used. A plant for such a process, however, requires large expenditures for erection and manipulation and since in the sulphite lye there is a ready solution containing about 2. per cent fermentable sugar there is little inducement for anyone to go to the outlay of building and operating such a plant to obtain perhaps a 4. per cent sugar solution.

The main reason why the fermentation of the sugar in the sulphite lye has offered such difficulties is because this liquor is a most unfriendly soil for the alcohol producing yeast cells. In the first place the lye contains free sulphurous acid which is known as a poison to all living yeast cells. In the first place the to be developed this acid must first be removed. But even then the lye still offers unfavorable conditions for the ordinary yeast as it yet contains matters poisonous to the yeast; at the same time it contains comparatively little nutriment for the yeast. Of fermentable sugar the sulphite lye contains dextrose, laevulose, mannose and galactose and of unfermentable sugar xylose. The idea of producing alcohol from these sugars is not new. As early as 1891 Lindey and Jollin undertook fermentation experiments but obtained only from 0.58 to 0.67 per cent by vol. of alcohol. Later on several attempts were made by others in the same direction, but without profitable results until Wallin in 1904 worked out a useful method which later was improved in a practical way by Ekstroin. The patents of Wallin and Ekstroin are now combined in one method which is usually called the Swedish method — and transferred to a concern Ethyl. Another successful process of later origin is the Norwegian method invented by Landmark.

The Swedish Method.

According to the Swedish method the difficulties encountered in fermenting the waste liquor have been overcome by using a "tempered" yeast capable of resisting the neutralized lye. This tempered yeast is prepared by propagating pure culture in a mash of malt whereupon sulphite mash, that is, neutralized lye ready for fermentation—is added little by little for a period of a day and a half when the yeast is ready for fermentation and can be carried directly into the fer-

mentation vats. The free sulphurous acid contained in the lye to be fermented is removed by neutralizing the hot liquor coming from the digesters with lime which may be in the form of waste lime from the sulphate, or soda process, or saturating lime from sugar factories. Finally slacked lime is added to neutralize the last traces of sulphurous acid. In this way large quantities of lime are introduced, varying from 11 to 13 gpl. CaCO_3 which is far more than required for the free sulphurous acid since for this alone only 2 to 3 gpl. of CaCO_3 should be needed. The lye thus contains other acids, principally organic, which combine with large quantities of the neutralizing case and this has a detrimental influence upon the further utilization of the liquor after having passed the distilling apparatus. The neutralized lye, after having cooled and settled, is carried into the fermentation vats and the tempered yeast added. The fermentation process is carried out at a temperature of about 27 deg. C. and is completed in from 4 to 5 days. The yeast being then separated from the fermented mash and again propagated in mash of malt. The fermented lye goes directly to the distilling apparatus. The raw alcohol obtained contains 92–93 per cent alcohol besides 3.4 per cent methylalcohol 0.4 per cent cymal and 0.5 to 1. per cent acetan and traces of aldehyd. It is stated that by fermentation of lye containing on an average 2.21 per cent sugar (dextrose) this method yields 0.93 per cent by vol. of pure alcohol equal to 42.08 cm³ per 100 grams dextrose.

The Norwegian Method (Landmark).

Instead of binding the free sulphurous acid by neutralization as in the Swedish process it is in this method removed by evaporation. In concentrating the lye about 15 per cent not only is the free sulphurous acid expelled, but the strong acid character of the liquor, at the same time is otherwise changed to such an extent that only from 2. to 3. gpl. of CaCO_3 is required to render it neutral. Any further neutralization with quick lime is not required. In sulphite wash thus prepared brewers yeast is capable of fermenting the sugar although the process proceeds slowly and somewhat irregularly. On the other hand if small amounts of an easily fermentable sugar is added the fermentation takes place easier and more uniformly. Such additions as small quantities of skimmed milk or whey have proven most suitable. Milk sugar as is known is not directly fermentable, but by warming with dilute acids it is easily converted into two other sugar bodies dextrose and galactose which are easily fermentable and particularly so in the proportion which is formed by the hydrolysis of milk sugar. The employment of milk also has the advantage of introducing important nutriment for the yeast which the lye does not contain or in any case only in very small quantities, namely nitrogen compound and small amounts of phosphates; the latter, however, may not be considered as the milk is used in small quantities.

The method of procedure is in short as follows: To a certain quantity of milk or whey an equal quantity of sulphite lye and a little muriatic acid is added and the mixture heated to about 40 or 50 deg. C., whereby the casein compounds are thrown down and are filtered off. This precipitate which is called ligno-casein contains about 65 per cent pure casein, and is very suitable as a paper sizing agent as with clay it sizes the paper clear white. It is more easily soluble in alkali than ordinary casein. It is all dependent upon local conditions whether milk or whey is to be used; the operation is the same in both cases, but skimmed

milk yields about 50. to 60. grams and whey only 10–15 gpl. of ligno-casein. Whether the ligno-casein is used in the same plant or sold in the open market it will cover most of the outlay for milk or whey as this is used in the small quantity of 0.3 per cent of the total liquor volume. The filtrate from the ligno-casein is next mixed with the lye to be fermented in the right proportion and the whole of it passed through an evaporating apparatus. The free sulphurous acid is driven off the milk sugar hydrolyzed and the lye concentrated about 15. per cent. The liquor after evaporation is neutralized with limestone powder whereupon it is cooled to 27 deg. C., and the yeast added. The yeast used for fermentation is refuse yeast from the breweries. Per 100 liters of mash from 0.4–0.5 liters of yeast are used. After from 4. to 5. days—in extreme cases 3 days—the fermentation is completed and the alcohol is distilled off. As in the fermentation industry in general so also here yeast is produced that can be carried over from one fermentation to another. After the fourth successive fermentation the resulting yeast has proven more active than the original yeast.

Yield of Alcohol.

The sugar content of the sulphite lye varies somewhat. This variation is a few tenths of one per cent. The average of a series of fermentation experiments carried out according to the Norwegian method gave:

Sugar (determined as dextros)—grams per	
100cc lye	2.04
Alcohol, per cent yield by volume	1.14
Absolute alcohol per 100 grams dextrose	55.7cm ³ .

By fermentation of sugar (pure dextrose) not all of it is transformed into alcohol, but only 95 per cent. The remaining 5 per cent is converted into glycerin, fusel oils and succinic acid. Thus 100 grams of dextrose yields only 48.4 grams (61.0cc) alcohol instead of 51.1 gr. (64.3 cm³) which would have been formed if all of it had been fermented. The above mentioned result of 55.7 cm alcohol would therefore correspond a yield in alcohol of 91.5 per cent, of what could possibly be obtained. But as the sugar is determined as dextrose and the lye also contains unfermentable sugar as xylose which cannot form alcohol the yield in proportion to fermentable sugar has actually been higher than 91.5 per cent.

Output and Cost of Production.

The cost will depend upon the size of the plant, the volume of liquor available per ton of pulp and upon its sugar contents. The available liquor volume per ton of dry pulp lies between 213 and 353 cu. ft. (respectively 6 to 10 cm³). Figuring an average of 282 cu. ft. = 8 cubic metres there would be obtained per ton of dry sulphite according to the

Swedish method:

$$8 \div 1000 \div 0.0093 = 74 \text{ liters } 100 \text{ per cent alcohol.} \\ = 21.8 \text{ U.S. gallons } 180 \text{ proof.}$$

Norwegian method:

$$8 \div 1000 \div 0.0114 = 91.2 \text{ liters } 100 \text{ per cent alcohol.} \\ = 26.8 \text{ U.S. gallons } 180 \text{ proof.}$$

The cost of production in Sweden is stated to be about 12 ets. per 180 proof U.S. gallons, while for a similar plant in Norway (15,000 tons mill and 238 cu. ft. lye per ton of pulp) working according to the Norwegian method the cost of production is given as 9 ets. per U. S. 180 proof gallons.

Use of Sulphuric Alcohol.

The alcohol manufactured from the sulphite lye has thus far been used only as denatured alcohol. It can be used also as a beverage as it can be easily rectified. Its main use has been in the technical industry where it is used for the manufacture of naphtha, chloroform, iodoform and a number of other organic compounds. Furthermore in large quantities for the manufacture of shellac, varnish and explosives, as well as in the manufacture of colors. In the daily life it is used for heating, lighting and for motive power. The alcohol gives a more pleasing light than does the kerosene, avoiding at the same time the inconveniences from smoke and its attending odor. Alcohol also is far more hygienic in its use than kerosene. Thus an alcohol lamp of 25 candles develops 86 grams of carbonic acid per hour, while a kerosene lamp of the same capacity will give off 234 grams. The air in the rooms therefore will not be nearly as polluted as when kerosene is used. To this must be added the superiority of the alcohol lamp in power. German firms have brought on the market alcohol lamps of high efficiency. These lamps give the same power with one gallon of alcohol as a kerosene lamp with 2.4 gallons of kerosene.

The most extended use of alcohol, however, will be in the field of locomotion. The alcohol can here compete with benzine and benzol. The danger of explosion is practically done away with when using alcohol which is far from being the case with gasoline motors. With regard to cleanliness, that is, smoke, soot and disagreeable smell alcohol has great advantage over gasoline and other petroleum products and also benzol. The latter products contain about twice as much carbon which upon combustion smokes and soots. In the Scandinavian countries as well as in Germany where the question of using alcohol as motive power has attracted much attention it has been established by thorough experiments that equally good results can be obtained with the same volume of alcohol as of gasoline and by further experimenting better results can be expected with the spirit motor. In going over to alcohol no change need be made with the motor, but since the alcohol requires only half as much oxygen for combustion as gasoline the air supply is diminished or the supply of alcohol increased by boring out the inlet.

With the ever increasing demand for gasoline and benzol it is to be feared that within a comparatively short time these two fuels can not be had in sufficient quantities and at a reasonable price. Both gasoline and benzol are fractional products; gasoline from the petroleum industry and benzol from the coal industry. The production of neither can be increased as desired, but is dependent upon the market for the other products obtained in these industries. There need be no fear of any overproduction of alcohol as the market is practically unlimited. But if the technical alcohol, however, should get the extended use it naturally deserves the price of it must come down and this can only be reached by using a cheap, abundant and easily convertible material and all this we have in the sulphite lye.

Recovery of Methyl Alcohol From Digester Relief Gases.

The two methods already described manufacture ethyl alcohol by fermentation of the sugar in the waste lye. In connection with these we might also mention a process invented by H. Bergstrom for the manufacture of methyl alcohol or wood spirit from the condensate

of the relief gases. This method is of a more recent date and is already practised on a large scale in Sweden. During the early stages of the cooking process the relief gases from the digester consists principally of sulphurous acid; towards the later part of the cook, however, this gas has changed in composition and for the greater part contains etherical oils and methylalcohol. The etherical oils are mainly furfural and cymal. In ordinary cooking practice these oils are returned to the acid tanks and back to the digesters thus constantly increasing in concentration and thereby causing irregularities in the cooking process such as burnt cooks, raw cooks, etc. Furfural is a oil having a specific gravity of 1.16 and a boiling point of 162 deg. C., it is comparatively volatile with water vapors and in case of its non-removal it will accumulate in the bottom of the acid tanks and finally form a black, sticky, tar-like substance which must be washed out from time to time to avoid too great irregularities in the cooking. Cymal on the other hand having a lower specific gravity remains on top of the acid. The formation of "rosin spots" in the pulp is due to these oils. The condensate of the relief gases amounts to about 18.20 cu. ft. per ton of pulp and contains from 5. to 5.5 gpl. of methyl alcohol and 100. gpl. SO_2 besides oils. In the cooking process about 15 lbs. of methyl alcohol is formed per ton of pulp and of this amount about one-third is contained in the condensate. The yield of oils is between $2\frac{1}{2}$ to 3 lbs. per ton of pulp. The amount of methyl alcohol in the condensate depends upon the pressure at which the gas was relieved from the digester and whether any excess cooking liquor was present. The raw spirit obtained contains also small amounts of azetaldehyde and acetan. It can easily be manufactured into pure methyl alcohol. From sulphate methylalcohol pure methylalcohol can also be produced, but in this case the process is more complicated.

Method of Procedure:

The relief from the digester is first cooled to 25 deg. C. to avoid any escape of alcohol which has a boiling point of 67 deg. C. The liquor is next passed through a tower so constructed as to spread the liquor over a large surface and steam admitted from the bottom to expel the methylalcohol and the SO_2 and the oils. The condensate now separated from the above ingredients is discharged through the bottom of the tower as valueless while the gases are passed through a cooler and into a tank where part of the SO_2 is given off. The oils with the lowest specific gravity as cymol will accumulate on the top of the alcoholic solution and is drawn off at regular intervals. The alcoholic solution is next carried over into another tank provided with steam pipes for heating the solution over again to expell any remaining SO_2 while the alcohol is returned to the tank by a cooler. The 10 per cent alcoholic solution is now led into a still and concentrated to 95 per cent. The furfural is found at the bottom of the still when the distillation is finished. The whole process proceeds automatically and is a very simple one requiring little attention and a small amount of steam. The method requires neither large outlay nor elaborate preparations and buildings as the whole outfit can be incorporated with the ordinary digester room, and is thus an arrangement any sulphite mill can easily install. On the other hand the method has the advantage that the manufacture of methyl alcohol is not subjected to government control and extra taxation as is the case with ethyl alcohol. The methyl alcohol process

does not in any way interfere with the production of ethyl alcohol from the waste liquor. Both processes can be worked in parallel.

Methylalcohol is used for light, heat and power, as a solvent to denature alcohol, in the manufacture of numberless drugs, dyes, perfumes, paints, varnishes, explosives and a number of other articles. The demand for methyl alcohol is constantly increasing.

The products thus far recovered from the sulphite lye are ethyl alcohol about 88 lbs. methyl alcohol and oils about 7 lbs. per ton of dry lullulose which constitutes a utilization of only 4 per cent of the dissolved organic matters. The alcohol therefore offers no complete solution of the lye question for the sulphite mills although one is justified in characterizing it as considerable progress.

As already mentioned the lye also contains from 75 to 100 gpl. of liquin and the methods of recovering it have been by evaporation. A Swedish chemist Strehlenert has worked out an entirely new process for recovering of the liquin which in short consists in oxydizing the SO_2 in the lye to SO_3 with air under high pressure and temperature. The liquinsulfonic acid compounds are thereby decomposed and the liquin is precipitated in filterable form while the other substances are left in the mother liquor. The precipitated liquin is an excellent fuel. This method gives gypsum as a

by-product as the lime in the liquor is precipitated beforehand with sodium bisulphate in order to get a fuel with the least possible amount of ash. The SO_2 combined with the liquin is also recovered. By the method of Strehlenert the liquin only can be recovered while the sugar as well as the other organic compounds are not precipitated. The sugar on the contrary is decomposed at the high temperature. This method can be combined to advantage with the Norwegian method for manufacture of ethyl alcohol by utilizing the sugar first. The Swedish process for manufacturing alcohol can not be combined with Strehlenert's method since the liquin can not be precipitated in workable form.

In case the manufacturer should still be obliged to evaporate the lye this procedure would be more favorable if the lye were first used for manufacturing alcohol according to the Norwegian method as by this process 1-6 of the volume of the lye is evaporated off before fermentation and in distilling off the alcohol a further concentration takes place so that the wash is at least 18. per cent more concentrated than the original liquor. At an alcohol plant using this system the initial concentration, alcohol distillation and the final concentration could be combined in such a manner that the total heat consumption could be so reduced as to render this process profitable.

Rumford, Maine, March, 1916.

The Conservation of our Forest Resources

(By R. O. SWEEZEY, C.Sc., M. Can. Soc. C. E.)

(Specially Written for the Pulp and Paper Magazine.)

In this country the principle of conservation has awakened such a sympathetic response from all intelligent proprietors of forests that we find, not only the inauguration and vigorous application of elaborate and efficient fire protective systems, but such advanced practice as reforestation on an important scale being introduced by one of the leading pulp and paper firms.

It is in this connection that Mr. Elwood Wilson, of the Laurentide Company, Ltd., is displaying such enterprising effort in boldly setting out to demonstrate the practical and economic application of a European forestry practice that is regarded as unpractical in this country. At least from the point of view of the private corporation. Mr. Wilson in his interesting paper recently written on this subject is especially deserving of thanks for frankly giving us cost data concerning his reforestation work, thus providing an important feature, the lack of which gives most technical papers

their dry and uninteresting touch.

Although Mr. Wilson's reforestation work at Grand Mere cannot as yet be said to be more than a successful experiment, this success as recorded is nevertheless extremely valuable and provides materials for careful study on the part of the Laurentide Company as affecting its future welfare.

If this company were operating its timber lands, as of old, that is, only for the white pine and extra large spruce, the question of reforestation would probably not have arisen. It is the enormous consumption of

immature trees, as practised not only by the Laurentide Company, but by the whole pulp and paper industry that must soon cause us to question whether present Government regulations amply provide for natural reforestation.

Because we are erroneously basing our calculations and methods on conditions that existed years ago, before the pulpwood industry held sway, I maintain that we shall soon realize that the capital wealth of the forest is being depleted with little or no prospect of renewal. Areas that are logged over to-day — even though the logger adheres scrupulously to state laws for cutting — are in grave danger of becoming mere "wind-falls" with a possibility of a future "cut" over the same area a very speculative one indeed.

But why should there be any uncertainty about the same area producing in a reasonable time a forest crop just as good as the one being cut to-day?

Do we not find areas that were even burned over — perhaps 100 years ago — offering good pulpwood crops to-day? We do, indeed, and such areas have been grown from seed, too. But had had there been no old spruce trees scattered about in little patches that escaped the fire the probability of a spruce covering would have given way to one of deciduous growth — examples of which an observant forester finds frequently enough.

It is known by the forester of course that spruce seed, in order to have a fair chance to germinate, must

come from a tree of considerably advanced age, and moreover, it is not every year that conditions are favorable for the seed. Hence by our present method of pulpwood lumbering in which only young and slender conifers are left we not only remove the old seed trees, but we invite the destruction of the remaining young trees by reason of their exposure to wind as a result of having cut the larger protecting growth. It may be stated, however, that if the year of cutting happens to be a good seed year the chances of a new growth, from the seed of the lopped off tops, are fairly good. By this method though we would be trusting very flimsy hopes for the future of our forests.

To remedy the evil nature suggests an easy and inexpensive method. Good example being found throughout the country the mention of one here will be sufficient. In the Upper Ottawa region a certain area of some fifty square miles was swept by fire about 75 years ago, and although the destruction was complete on the burned parts there is growing on them to-day a dense covering of valuable spruce which sprang up from seed supplied by the fortunate presence of scattered clusters of five or six to fifteen or twenty old spruce trees, which escaped destruction at the time of the fire. Elsewhere the same fire swept some areas clean, leaving no such clusters of seed trees with the result that only deciduous trees have sprung up. Here then is a simple condition where nature, aided by the retention of a few parent trees, was able to create a new forest as valuable as any man-planted area.

And the cost of such natural reforestation is negligible as compared with artificial planting. Consider for example reforestation at a cost of (\$10.00) ten dollars an acre for planting alone. At the end of one hundred years the best we can expect from that acre is 75 cords of pulpwood. Had the \$10.00 been invested at 6 per cent, compound interest, it would have grown in that 100 years to \$3,390.00. Even if we allow the acre to grow on for 112 years and that it should yield 100 cords of pulpwood, by that time we would find our ten dollars, at 6 per cent, grown to nearly \$8,000.00 — rather a high price to pay for 100 cords of pulpwood.

It seems to me that we must pay much more serious attention to the study of the natural conditions of our forests with a view to assisting and utilizing nature's efforts at reforestation. We are too apt to seek analogies in European countries and to become dazzled by sophistic arguments failing to see the frequent incongruities of the situation. Conditions in Canada are totally different from those of Europe and consequently our forest problems demand special consideration. Had Europeans not destroyed their forests at an earlier age, the exorbitant costs they are now paying for artificial reforestation would be largely unnecessary with them. And if we take care to manage our existing forests properly, artificial reforestation will be unnecessary with us, except, of course, in such waste areas as are already treeless or denuded.

One of the important questions then for early consideration and study is the advisability of leaving old seed trees in little groups of four or five scattered throughout the lumbered areas. Personally I am convinced of the urgency of such practice, but some discussion should prove interesting and valuable.

A Break Reported in the Rag Market

The Future Discussed From Every Angle.

(Special to The Pulp and Paper Magazine.)

New York, N.Y., April 8, 1916.

Much surprise was occasioned early this week by a sudden cessation of the upward trend of the rag market. It seemed as though all of the mills which had been eagerly searching for had, at once, stopped buying. Rag dealers throughout this city, fearing the worst, were puzzled as to the exact cause for this unexpected break. However, rumors soon became current of various meetings held by the consumers of rags, at which it was determined that every effort was to be made to "bear" the market. According to one rumor, the mills were to keep out of the market for about three weeks' and were to make every possible ostentation to show that they were well supplied with stocks.

The change in market conditions was remarkable and sudden. Packers, accustomed to having the mills buy anything and everything, were surprised to receive notices of rejections. In these days of rag shortage, it was known that the paper manufacturer was generally glad to get whatever stock was available and was in no position to even think of rejecting any part of his shipment. The stock men claimed it was evident that some plan was being effected to make an impression on the supply dealers. A number of local rag dealers received letters from various mills, stating that they had "so many" cars of No. 2, white's which they were seeking to dispose of and asked for an offer. Such an action as this was most unusual, for there had been an extreme dearth of No. 2, white's, and the mills had been paying premiums, in order to get them. For any manufacturer to suddenly announce that he had some of this stock, was a surprise for it was indicative that certain mills were actually oversupplied.

An authority in the supply business stated to your representative that this break in the market was most propitious to most of the ragmen. According to his statement, only a few of the stock men have been speculating. Most of the others are conservative after the prices reach a certain level and will not buy on a high market. Up to the present time, business among the supply, says our informant, has been on a "turn-over basis." Just now, many of the largest dealers are almost without stock — their warehouses are practically clean. These dealers will not buy on a high market unless they have a sale made. However, they are all anxious to buy. Many have been filling old contracts, which were made at low figures. They would save money if they could get stock at normal figures. This, according to the party who was interviewed by your correspondent, is the big opportunity for the rag man. While the market has gone down a bit, it is expected to reach a lower bottom within the next week or so. But, there is bound to be a resumption of the recent ascendance.

Though the market has apparently eased, the basic conditions, the underlying state of affairs are said to be the same as they were a few weeks ago. The causes for the unprecedented boom still exist. Despite the great publicity which was given to the rag shortage and despite the fact that this publicity actually resulted in an increased collection of rags, there is still a shortage. There is not enough stock available to allow all of the mills to put in a supply, as they usually do.

The immediate future of the rag market is full of interest. As has been stated, it is expected that the mills will have to buy to a certain extent. They are all running at full capacity and have been able to obtain only limited supplies. It is understood that most of the manufacturers have orders on their books, the volume of which is sufficient to keep them operating continuously for several months. With such a condition existing, it is only natural for the rag dealer to feel that the mill cannot long remain out of the markets.

The question uppermost in the minds of the supply men is, "What course will events take this summer?" Usually, the summer months are characterized by considerable dullness. Last July and August, the rag market dropped to the lowest point it has ever reached. Will events repeat themselves? The whole matter hinges on the real character of the enormous demand for paper of all kinds which has made the past few months the most noteworthy in the history of the trade. If the greatest part of this abnormal demand for paper was speculative — caused by jobbers and consumers who bought ahead to "cover" themselves, fearing unlimited advances of prices, there is bound to be a reaction. The time must come, and come very soon, when excited brains will regain their reason and when an inventory will reveal the fact that there is on hand an enormous superfluous stock. Such a realization, if the market has really been speculative, would undoubtedly be followed by a dull period.

But, has the market been speculative, or has enough of it been speculative to warrant the belief that the summer will be dull. General opinion is that the consumption of paper has increased greatly within the past few months. However, it is also recognized that the high prices of papers have forced many concerns to adopt numerous small economies. However, it is estimated that the increase in exports has been a factor of considerable importance and will continue to be so. This calculation tends to the conviction that the demand for rags will soon become abnormal again and that this abnormal demand will continue through the summer and attain even more amazing proportions in the fall. There is no hope for receiving rags from abroad. England's embargo on rags is being firmly maintained. France will not even allow such stock as was sold before its prohibition became effective, to leave its shores. It is expected that Spain, Portugal and Italy will soon find it advisable to conserve their rag supplies and place them under embargo for export.

There is no fear that the United States cannot supply all of the rags necessary to keep its paper mills operating. The recent publicity has brought rags into the market from sections hitherto unknown in this field. But, in order to continue these sections as permanent sources of supply, it is inevitable that a good price must be paid for the stock. Just as soon as the prices are forced down, collectors find it unprofitable to remain in this line of work and seek other occupations. Immediately, collections drop. To make the United States self-dependent for its rag supplies, everything must and will have to be done to encourage the greatest possible collection of rags, in other words, fairly good prices must prevail. So, regardless of how low the market may go within the next few weeks, it cannot remain so long. And just so long as this country must supply all of its own rags, the mills should be willing to pay a fair price.

Pulp Paper in India

An extremely comprehensive and valuable report on the pulp and paper resources of India appears in the last issue of the Canadian Government's Weekly Trade Bulletin. The report is by Mr. H. R. MacMillan, and in part follows:

The yearly consumption of paper in India, 75,000 tons, estimated at \$7,490,000 in value, for 1914, is not as great as might be expected in a country with a population of 320,000,000. The consumption is, however, increasing, having amounted to only \$5,444,000 in 1908. It is estimated that the use of paper, with the spread of education and the growing industrialism and steady increase of the per capita purchasing power of the population, is increasing at a rate exceeding 5 per cent a year. The imports have increased in value by 65 per cent in eight years.

Though Canadian paper products have not yet entered the Indian market the possibilities presented by a country with such an enormous population, steadily growing in numbers, wealth and education, are such as cannot fail to be of interest to the paper manufacturers of Canada, who are certain within a few years to be looking for greatly increased export markets.

The fact that there are as yet only 341 printing presses in India, or slightly more than one press to the million of population, is an indication both of the present limited use of paper and of the room for and possibilities of expansion.

Though India is not endowed with the papermaking materials commonly used in other countries, many efforts have been made during the past half century to develop a paper industry. Ten or a dozen mills have been started in that time, of which five are now operating. The production of paper in India has during the past eight years remained approximately constant at 29,000 tons per annum, valued at about \$2,500,000. The domestic production of paper, in comparison with the total consumption in the country has dropped from almost one-half of the total in 1908 to slightly over one-third of the total in 1914.

The manufacture of paper in India has not been a prosperous industry. The companies engaged in it have suffered various reorganizations and losses, and have not paid dividends. The chief customer has been the Government, which purchases the greater part of its requirements of wrapping paper, cheap foolscap, blotting paper, cheap printing paper and envelopes from Indian mills.

Products of Mills.

The chief products of Indian paper mills are medium grade printing, wrapping and writing papers for Government and railroad use. Normally the mills in India depend almost entirely upon Government contracts and sell very little of their output in the open market. Were it not for these large contracts which wherever possible are placed in India to foster native industries and which before the war absorbed almost the whole output of 30,000 tons a year, Indian paper mills would find the struggle for existence even more severe than it has been. As it is the local mills have not been able to maintain their relative position in the Indian market in the past decade, and even within the past five years Indian paper mills have lost a portion of the Government business.

Obstacles to be Confronted.

Indian paper mills in their competition with the imported product suffer from (1) the lack of cheap raw material for fibre which will compete in price with mechanical spruce or balsam pulp. (2) Their small size and comparatively high construction cost. (3) The peculiarities of the market, in which there is a restricted demand for high grade papers, and a very great demand for the cheapest varieties of paper suitable for the bazaar trade.

Securing of Fibre.

The chief difficulty has been in the securing of fibre. Though there are spruce forests in the Himalayas on the northwest frontier of the country, the working of which for the production of pulp is now under consideration, it is very doubtful if there are large areas which can be logged sufficiently cheaply to compete with imported paper or pulp. Lacking wood the Indian mills have been forced up to the present to depend upon grass, waste paper, rags, jute, hemp and imported sulphite pulp.

The grass most commonly used is subai gras (*Ischaemum angustifolium*) a sample of which has been sent to the Commissioner of Commerce. This grass costs delivered at the mill about \$12 per ton of pulp manufactured. It is treated by the soda process; 100 tons of green grass produce 40 to 45 tons of soda pulp weighed at 10 per cent moisture content. Unbleached subai pulp costs \$45 to \$55 per ton. Fine printing papers and medium writing papers are made from 80 per cent subai and 20 per cent imported sulphite pulp. Subai grass is claimed by Indian paper manufacturers to be only slightly inferior to esparto grass.

Size of Mills.

The existing mills are further handicapped in the production of cheap papers by their small size. The four largest mills produce only 96 tons per day between them, and the largest and most modern mill produced in 1913 only 32 tons per day.

The extension of the mills to a more economical working size has been prevented by the unprofitable nature of the enterprise up to date, the absence of accessible supplies of raw material sufficient to justify large mills, and the lack of a cheap enough fibre to enable Indian mills to compete in that portion of the domestic market in which the greatest quantities of paper are consumed, the bazaar trade.

The capital invested in four mills producing a total of 96 tons per day is about \$2,000,000. This high capital investment is partly due to a very expensive type of construction. The average daily labour employed in the same four mills totals 4,274. A large number of natives are employed sorting grass and rags. The wages paid natives average about 15 cents per day. Beatermen are paid \$10 per month, and machine tenders \$16 per month.

Though the fibre used in India is suitable for the production of a large proportion of the better grades of writing and printing papers imported, the market for this class of paper is too limited to enable any Indian mill to undertake the manufacture of the many grades and specialties necessary.

Peculiarities of Market.

The paper manufacturer in India is unfortunate. He is shut out from his most important market, that for cheap papers, by the high cost of his pulp. The domestic market for good papers for which his pulp is suitable is not large enough to be worth his while.

Since the outbreak of war small quantities of newsprint have been manufactured in India. Such paper has commanded \$116 per ton; the bleached sulphite pulp which entered into it cost \$90 per ton.

Samples of paper manufactured in India together with the normal wholesale selling prices have been forwarded to the Commissioner of Commerce.

Pulp Importations.

Indian paper mills have depended upon imported sulphite pulp. This pulp is usually imported unbleached and bleached in India at a cost of about \$5.50 per ton.

The imports of pulp during the three years ending March 31, 1915, have been:

Country.	Quantity long tons.		Value.	
	1913-14.	1914-15.	1913-14	1914-15.
Sweden	2,234	4,710	\$99,052	\$225,422
United Kingdom	4,621	2,935	212,318	152,865
Germany	2,442	857	97,185	42,318
Austria-Hungary	561	221	26,822	13,304
Denmark	2,465	195	97,185	12,038
Hong Kong	600	.....	2,899	.....
Total	12,923	8,918	535,461	445,947

No records are available for the importation of wood pulp previous to 1912-13. The amount imported yearly shows a tendency to decrease. No increase is likely unless existing mills are extended or unless, as is probable, new mills are erected for the manufacture of grass pulp.

The importations in the past have come chiefly from Sweden. The importations credited to the United Kingdom are re-exports, some of which may come from Canada.

Prices of Unbleached Sulphite.

The average invoice value per long ton of unbleached sulphite imported during the year referred to was—

1912-13	\$40.07 per ton.
1913-14	41.43 “
1914-15	50.00 “

As has been pointed out above the c.i.f. price has risen during 1915 to \$90 per ton. Paper manufacturers in India have made efforts to make purchases in Canada particularly on the Pacific Coast, and hope that when conditions again become normal it will be possible for Canadian pulp manufacturers to export to India. Should the manufacture of soda pulp in India from bamboo be undertaken on a large scale the import of sulphite wood-pulp will probably cease.

Paper.

Except during the war no newsprint is manufactured in India. The newspapers of India are few in number, small in size and circulation. Only two or three rotary presses are operated. The consumption of newsprint is therefore limited and the greater part of what is imported comes in 500-pound bales, cut to size for flat presses.

The more important English newspapers use 14 to 16-pound newsprint manufactured in Sweden and Norway. The native Indian press which, when the publication of books is taken into consideration, uses by far the largest proportion of the newsprint imported, uses very light low quality paper, 8½, 9 and up to 11 pounds per ream of 18-inch by 22-inch. This low grade paper was before the war imported from Scandinavia, Germany and Austria at 2½ cents to 3¼ cents per pound c.i.f.

Samples of the newsprint papers used in the Indian market have been forwarded to the Commissioner of Commerce, Ottawa.

Printing Papers.

The chief importation of printing paper, other than newsprint, consists of very cheap grades to meet the requirements of the bazaar trade. The bazaar purchasers demand the lightest possible paper for hand-bills, news-sheets or books. Preference is given to the paper which gives the most bulk for the weight. (Cheap coloured printing paper is used for covers.)

The quantity and value of the annual importations of printing paper during the past two years is shown in the following table:—

Country.	Quantity long-tons.		Value £ Sterling.	
	1913-14.	1914-15.	1913-14.	1914-15.
United Kingdom	8,882	8,465	172,514	167,951
Norway	2,639	3,049	33,653	42,605
Germany	4,654	1,536	65,463	22,704
Austria-Hungary	1,953	551	28,614	8,207
United States . .	20	295	694	3,764
Total	20,112	16,345	327,380	278,709

The importations during 1914-15, which included eight months only of the war, show a striking decline from Germany and Austria-Hungary.

Samples of the printing papers now being imported have been forwarded, together with normal c.i.f. prices to the Commissioner of Commerce, Ottawa. The fact that the United States has been able to start a small business in the better class of printing papers should indicate possibilities for Canadian manufacturers.

Wrapping Papers.

The annual importations of wrapping paper are shown in the following table:—

Country.	Quantity long-tons.		Value £ Sterling.	
	1913-14.	1914-15.	1913-14.	1914-15.
United Kingdom	2,214	6,384	24,757	48,724
Norway	1,097	491	12,397	5,891
Sweden	1,281	2,036	15,848	16,686
Germany	1,515	420	17,550	5,020
United States . .	83	337	133	2,543
Sweden	513	282	5,913	3,803
Austria Hungary	423	235	4,356	2,181
Total	4,218	8,510	48,252	72,264

Wrapping paper is the only line in which an increase in imports is shown for the year 1914 and 1915. The increase amounted in this case to 50 per cent. Another striking feature is the gain made by the United Kingdom and the United States. There is an active demand in India for various grades of wrapping paper and manufacturers in Canada by inspecting the samples and prices forwarded to the Commissioner of Commerce may judge of their ability to compete. The low-grade wrapping papers known as badamis, sometimes used as printings by the railroads, are made in India.

Writing Paper and Envelopes.

Very large quantities of cheap writing paper and envelopes are used in India yearly. The whole of this class of paper is imported. The value of this trade and its present distribution is shown below:—

Country.	Value, £ Sterling.	
	1913-14.	1914-15.
United Kingdom	164,563	123,319
Austria-Hungary	38,440	16,973

Germany	25,379	12,803
Norway	3,489	3,541
United States	2,836	2,190
Sweden	3,422	1,490
Total	259,964	169,925

The first few months of war conditions resulted in cutting off over half the German and Austrian supplies, but so great was the lead of these two countries over other competitors (excepting the United Kingdom) that relative positions remain unchanged. A part of the imports from the United Kingdom consists of re-exports. The remainder includes almost the whole of the high-grade and business papers. The Austrian and German supplies were solely for the bazaar trade where German foolscaps of 6, 7 and 8 pounds per ream and exceedingly cheap Austrian note-paper and envelopes found a large sale.

Writing papers from the United States consist chiefly of bank and bond, which, because of their bulk, crackle and feel are popular. Paper manufacturers in Europe have not been able to produce a paper with the same characteristics at prices to compete with the American papers, and samples are being forwarded to the Commissioner of Commerce to learn if a suitable substitute may be obtained from Canada.

Other Paper.

Large quantities of other papers, tissue, grease-proof, manila covers, ledger, account book, drawing, carbon, blue print, marbled, copying, etc., are imported, which, together with the manufactures of paper, are shown below:—

Country.	Quantity, long-tons.		Value, £ Sterling.	
	1913-14.	1914-15.	1913-14.	1914-15.
United Kingdom	18,178	17,515	215,568	220,344
Germany	3,321	1,684	59,706	29,801
Norway	298	572	4,194	8,474
United States . .	109	447	5,126	7,376
Sweden	536	444	8,483	6,832
Belgium	508	277	13,204	6,956
Holland	147	216	16,603	2,833
Austria-Hungary	751	206	5,401	4,440
Japan	81	138	.....	9,272

Total 24,294 21,898 340,822 309,899

After the United Kingdom, Germany has been the most important source of these papers, Germany and Austria supplied particularly tissue, tinted, grease-proof, tissue and book-binding papers.

The war has increased by several hundred per cent the trade from the United States and has greatly added to the imports from Japan and Norway. The toilet tissue and carbon papers in India are chiefly from the United States. The import from Japan is chiefly tissue, much of which is undoubtedly made from Canadian pulp. The manufacture of grease-proof has been taken up in the United Kingdom since the outbreak of war, and tinted papers coloured with vegetable dyes are now being exported from the United Kingdom to India in place of the German aniline coloured papers previously imported. Norway is now exporting some of the tissues which formerly came from Germany.

Papers in which Canada might compete in this class are tissue and cheap machine finished tints.

FOREST FIRE HAZARDS.

The State authorities in some of the lumber districts throughout the United States are co-operating in reducing the forest fire hazards. A conference of forestry men, lumbermen and railroad officials was held in Lansing in March to consider the situation in Michigan. The railroads are co-operating in reducing the spark hazard, and it was reported that the percentage of fires due to locomotive sparks had been reduced from 66 per cent in 1912 to 36 per cent in 1913, and 14 per cent in 1915. Last year the railroads employed 265 men to patrol their lines, and some roads in the logging districts are following up trains with a gasoline car equipped with pumps and an experienced fire fighting crew. An increase in the State expenditure for fire protection was urged.

FEARS CANADIAN COMPETITION.

In his annual report as president of the International Paper Co., P. T. Dodge comments on what he characterizes as the "injustice" of free admission of newsprint to the United States from Canada, and the action of the Canadian provinces in placing restrictions on the sending of wood from Crown lands in Canada to American mills. The International Paper Co. owns about 3,000,000 acres of woodland in Canada. Concluding his remarks on this subject, Mr. Dodge says: "The building of news mills in the United States has ceased. Canadian mills are being erected at short intervals; and at the present time Canada is shipping into this country approximately 1,000 tons of newspaper per day.

"Justice and sound economic principles would seem to demand that Congress require the free admission of wood into the United States as a condition to the free entry of the Canadian manufactured product."

THE DEMAND FOR KRAFT.

Since the outbreak of the war the price of Kraft paper has doubled, and is now selling at 8 cents, as against 4 at the commencement of the struggle. The advance in price has been of the greatest possible benefit to Canadian producers of Kraft—such as the Wayagamack Pulp and Paper Company. The foreign imports of Kraft have been cut off by the war, and local manufacturers have the field to themselves.

RIORDON COMPANY OFFICIALS.

At a meeting of the Directors of the Riordon Pulp and Paper Company held a few days ago, the following officers were elected for the ensuing year: Charles Riordon, president; Carl Riordon, vice-president and managing director; C. E. Read, secretary; Fred B. Whittet, treasurer.

AN IMPORTANT INDUSTRY.

At a dinner tendered to J. E. A. Dubuc, president of the North American Pulp and Paper Company, by leading figures of the paper mill industry and prominent financiers, in Philadelphia recently, it was stated that those present represented over \$50,000,000 capital. They came from all the large cities on the continent, including Montreal.

"WASTE NOT—WANT NOT."

Waste in any form is extravagance, but when the material represented by waste constitutes a severe drain upon the natural resources of our country, it is all the more to be deprecated.

To-day the United States is suffering from a serious shortage of paper-making material, including old paper. In an endeavour to overcome this shortage, they are drawing heavily upon Canadian supplies, and one large Canadian manufacturer advises that this increased demand will result in an early shortage in Canada. This is especially true of waste paper, such as old newspapers, magazines, wrapping paper, etc. This stock is used in the manufacture of the cheaper grades of paper, building paper, tarred felt, patent roofings, mill-board, and filling for cardboard, etc. There are at present three mills in Canada using reclaimed paper exclusively in their manufacturing.

Canada is wasting fully 500,000 pounds of paper weekly without any reasonable excuse. It is estimated that a ton of wood-pulp requires eight trees, averaging nine inches at the butt. To replace this waste of paper stock, therefore, necessitates the cutting of approximately 2,000 trees weekly, or over 100,000 annually in Canada's forests.—Conservation.

THE LATE DAVID MACLAREN.

Mr. David MacLaren, whose death has just occurred, was one of Ottawa's best known business men, being prominent in the lumbering industry and in the financial world. He was president of the James MacLaren Lumber Company, and a former president of the Bank of Ottawa, as well as being a director of a number of other corporations. He was born near Ottawa in 1848, and educated in the Capital and at the University of Toronto. As a young man he entered his father's lumbering business, eventually becoming its head. He was president of the Bank of Ottawa for several years, resigning the position a year ago as the result of ill-health.

RIORDON DIVIDEND.

Riordon Pulp and Paper Co., Ltd., has declared an initial dividend of 1¼ per cent on its \$4,500,000 common stock, payable May 15th to shareholders of record May 5th.

UNION BAG AND PAPER.

At the Union Bag and Paper Co. meeting held in New York, at which resolutions were adopted that the president appoint a committee to look into the feasibility of capital readjustment, August Heckscher, as chairman of a stockholders' committee, appointed about three years ago to make investigation of the company's affairs, stated that after careful appraisal the committee concluded that the value of properties was about \$10,000,000 instead of present book value of \$27,000,000. He said financial readjustment should be so made as to give the common stock a greater equity in assets and pave the way for dividends in the near future.

PLANTING TREES IN MASSACHUSETTS.

Over 1,000 acres of land purchased by the Massachusetts Forest Commission will be planted this spring to white pines and other conifers. During the next few weeks state nurseries in Amherst and Barnstable will send 1,000,000 small trees to portions of the state selected for reforestation.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine.)

The Federal Paper Board Company is the name of a new corporation that has just purchased Mill No. 2, formerly operated by the American Paper Company of Bogota, N.J. W. G. Shortess is the president of the new company. Associated with Mr. Shortess is Stephen B. Fleming, formerly vice-president and general manager of the United Box Board and Paper Company. The mill which the new company has purchased has one 115-inch board machine, with a capacity at 40 to 50 tons per day.

The acting Secretary of the Treasury has addressed letters to the custodians of all of the federal buildings at Washington, D.C., asking that they post the circulars calling for waste paper and rags as sent out by the Department of Commerce. In furtherance of this order he has suggested that paper and rags be saved and sold instead of burned, and that baling presses be purchased where desirable.

The Hawley Pulp and Paper Company, of Oregon City, Ore., is planning to build another mill. A Portland concern has the contract for the erection of the reinforced concrete mill buildings on the new site near the present mill. The old buildings on the site recently purchased from the city, are being removed, and construction work will be rushed with all possible speed. The old plant of this company represents an investment of fully \$2,000,000, and by the time that the new plant is equipped and in operation it is expected that the total investment will have increased to about \$3,000,000. A quantity of equipment for the new plant has been ordered, including a large paper machine, and thirty-two 60 inch dryers. This paper machine will be driven entirely by electric motors.

The expenditure of \$250,000 will be made by the Inland Empire Paper Company in the expansion of its plant at Milwood, near Spokane, Wash., it is announced by R. S. Talbot, the general manager. This will add much to the equipment, and will increase the investment to \$1,500,000. The addition is a sulphite plant of five buildings, made of steel, brick and cement, to be used in the manufacture of acids and raw materials, which the company has bought abroad heretofore. Plans and specifications have been placed in the hands of contractors for bids.

On Wednesday of last week a number of board manufacturers held a meeting at the Hotel Biltmore in New York City. The proceedings were held behind "closed doors" so it was impossible to learn just what transpired. However, it is understood that among the matters discussed was the question of raw material supply. It was rumored that meetings were also held by the wrapping and the bag men.

The Union Bag and Paper Company has just issued its seventeenth annual report. This report reflects directly the unprecedented chaotic condition which existed in the bag market during the greater part of the year

1915. It is generally conceded that bag prices last summer were lower than ever before recorded. President John S. Rigel in his report to the stockholders credits these facts described for the debit reflected in the financial statement for the past year.

The Pejepscot Paper Company has just contracted with the Walter H. Bowes Company, Inc., of 30 East Forty-Second, New York City, for the equipment of its No. 1 machine in the Bowdon Mill at Brunswick, Me., with the Dodge Gravity Evacuator.

Contrary to announcement made some months ago the pulp mill of the Lindauer Pulp Company, at Merrill, Wis., will not go out of business as soon as the present supply of raw material is exhausted. The property has been purchased by the Wisconsin Valley Electric Company, which concern at first expected to use the entire mill property and site for an electric power station. Plans, however, have now been changed so that the Lindauer people can continue to operate the pulp mill.

The Whiting-Plover Paper Company of Stevens Point, Wis., has just completed extensive improvements in its loft drying equipment, the cost of which aggregate about \$2,000. The mill has discontinued the manufacture of all "flats" and hereafter will make only boards and ledgers.

Louis C. Locklin, proprietor of the Ashland Paper Company, was in Niagara Falls, N.Y., recently looking for a site for a new plant. He did not say whether he intended to build at the Falls or in North Tonawanda. The company manufactures tissue papers of various kinds; also paper napkins and other novelties. After leaving Niagara Falls, Mr. Locklin went to North Tonawanda, where, it is said, he was made an excellent offer to locate there.

S. D. Warren & Company, of Cumberland Mill, Me., are not building a new pulp mill as has been stated, but are rebuilding the cooking department of its soda pulp mill, and making such other changes as were rendered necessary by a slight change in the location of a portion of it.

The California Bag and Paper Company, has been organized by Walter Mackay, of Oakland, and Frank L. Taylor, formerly at the head of the Taylor Paper Company, of San Francisco. The company will establish a new paper bag factory at Emeryville, Cal. Orders have been placed for paper bag machinery, etc.

The mill of the International Paper Company at Niagara Falls, New York, which was closed recently by a strike among the firemen and paper mill workers has resumed operations. Five of the six paper machines were put in operation on April 3rd when 25 firemen and 50 paper mill workers from New York, manned the boilers and machines.

The Lancaster Board & Oaoer Company has been incorporated at Lancaster, Ohio. The capital stock is \$50,000, and the incorporators are: Henry B. Peters, Geo. P. Rising, Edward DeLancy, Chas. S. Hutchinson and John L. Graham.

According to reports from Rumford, Me., the Maine Coted Paper Company of that city, is to begin a \$200,000 addition to its plant in the near future. It is expected that the enlargement will mean the employment of a great many more men.

The Lake Champlain Pulp & Paper Corporation has taken over the properties of The Progressive Pulp & Paper Company at Plattsburg, New York, which recently were involved in litigation. The officers of the new company are: President, C. W. Higley, Hudson Falls; Vice-President, C. S. Johnson, Plattsburg; Treasurer, W. W. Allerdice, Saratoga; Secretary, Luther A. Wait, Hudson Falls.

CANADA BOXBOARD COMPANY ORGANIZE.

Toronto, April 14.—One of the biggest transactions in the pulp and paper line has just been carried through, whereby the Canada Boxboard Company, with a million dollars capital, has been organized, and takes over the interests and plant of the Trent River Paper Co. at Frankford, Ont., and the Montreal Boxboard Co., which was launched over two years ago by O. A. Porritt. Both plants will be operated as formerly, but on a more extensive scale. Norman G. Czowski, man. dir. of the Trent River Paper Co., is the man. dir. of the new Canada Boxboard Co. which is backed by ample capital. Mr. Porritt will remain at the head of the Montreal end. The Canada Boxboard Co. will put some new lines on the market. Both the Frankford and Montreal plants are operating to the fullest capacity, and have orders ahead for several weeks. James Logie will be the selling representative for both plants in Toronto. He has represented the Trent River mills for some time. N. G. Czowski, of the new concern, is a grandson of the late Sir Casimir Czowski, and O. A. Porritt is a former member of Price Bros. and Co.

TRADE NOTE.

The Lomas Book and Stationery Co., 87 King street East, Toronto, which was launched a few months ago, is being discontinued.

PAPER MAKERS MEET CUSTOMERS.

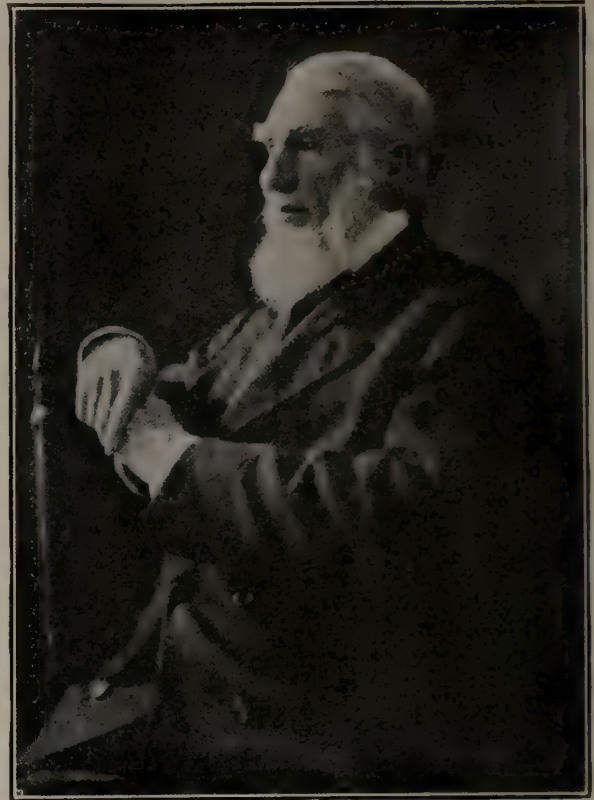
George Chahoon, Jr., president of Laurentide, Limited, has returned from New York, where an important conference between paper producers and consumers took place.

The question of supply and demand was thoroughly gone into, the consumers of the situation as regards output with a view to adjusting consumption thereto.

The demand for paper it was pointed out by the manufacturers, was in excess of the output. In consequence all available mills are operating to capacity.

NEW DIRECTOR OF RIORDON COMPANY.

James S. Douglas, secretary-treasurer of the Mail Printing Co., Toronto, publishers of the Mail and Empire, has been elected to the board of the Riordon Pulp and Paper Company, succeeding the late J. G. Riordon.



MR. J. R. BOOTH.

Mr. J. R. Booth, the veteran lumberman of Ottawa and Hull, has just celebrated his ninetieth birthday. Despite the fact that he is now twenty years past the allotted three score years and ten of the Psalmist, Mr. Booth continues to take a very active interest in all his company's interests even to helping around the mills. He was born in Shefford County, P.Q., and as a young man went to the United States, where he worked on railroads and in various lumbering camps. Ten years before Confederation he moved to what was then Bytown, a little lumbering village on the outskirts of civilization, and commenced in a very small way to manufacture lumber. Later he built the Canada Atlantic Railway between Ottawa and the United States border, in order to provide an outlet for his products. To-day John R. Booth is the largest owner of timber limits in the Dominion, and one of the most extensive manufacturers of lumber, pulp and paper, and other wood products.

TO BE NEWS PRINT YEAR.

Northern New York makers of newsprint look for the biggest year in the history of the business during 1916. Frank L. Moore, president of the Newton Falls Paper Co., concedes that the demand for newsprint paper was so great that it was impossible to handle the orders. This great increase in business applies to every line of paper.

At the present time the newsprint mills in the country are producing 4,565 tons of paper a day. The domestic orders are so large that manufacturers have been obliged to limit exports in order to provide for the home consumption. During 1915 there was a falling off in exports to the amount of 10 per cent and this bids fair to be greatly increased during 1916.

—The Paper Dealer.

Ottawa Notes

Ottawa, Ont., April 10.

The campaign being conducted in the United States for the saving of rags and waste paper has spread to Canada. The Department of Trade and Commerce has issued notices which are to be posted up in conspicuous places, calling attention to the shortage of paper material and urging that housewives do their best to help overcome this shortage. The poster is as follows:

SHORTAGE OF PAPER MATERIAL

Save Your Waste Paper and Rags.

The attention of the Department of Trade and Commerce has been called to the fact that there is a serious shortage in Canada of raw material for the manufacture of paper, including rags and old papers.

A very large quantity of different kinds of paper and paper-board is manufactured every day in Canada, and a large proportion of this, after it has served its purpose, could be used over again in making some class of paper. Much of it, however, is either burned or otherwise wasted, and has to be replaced by new raw material.

It is of great importance now that this waste should be stopped and that the saved material should be used to reproduce first supplies. In this way new material could be conserved and substantial sums realized from otherwise wasted material.

The Department of Trade and Commerce is glad to bring this matter to the careful attention of the public. A little attention to the saving of rags and old papers will mean genuine relief to our paper industry and a diminishing drain upon our sources of supply for new materials. The rags and paper thus saved can be readily disposed of through the usual channels of collectors and dealers in these articles and through the industrial department of the Salvation Army in our principal cities.

GEORGE E. FOSTER,
Minister of Trade and Commerce.

The Conservation Commission has also been pointing out the importance of conserving waste paper. A bulletin just issued by the Department points out that in an endeavor to overcome the shortage of paper-making material, including old paper, which exists in the United States American dealers have been drawing heavily on Canadian supplies and Canadian manufacturers advise that the increased demand will result in an early shortage in Canada. Canada is said to be wasting 500,000 pounds of paper weekly without reasonable excuse. It is estimated that a ton of woodpulp requires eight trees averaging nine inches at the butt. To replace this waste of paper stock, therefore, necessitates the cutting of approximately 2,000 trees weekly or over 100,000 annually in Canada's forests. The success of the arrangement made by the Daughters of the Empire in Ottawa, whereby approximately 15 tons of paper are collected monthly and sold for patriotic purposes, is referred to as indicative of what can be done in the way of saving.

The Laurentide Power Company gives notice that it has deposited amended plans of its proposed hydro-electric development in process of construction on the St. Maurice river, with the Minister of Public Works at Ottawa, and has asked for approval of the same.

The fact that he availed himself of his judicial position to obtain 50 cents more for his pulpwood than was paid to other owners of such timber was one of the main reasons why County Court Judge Fitch, of Fort Frances, Ont., has been dismissed from his position by the Minister of Justice, Ottawa. Another reason was that Judge Fitch had made use of horses under seizure in a lumber camp in which he was interested. This is the first time a judge has ever been removed in Ontario.

Further heavy snowfalls after the first spring thaw have kept all the rivers in this district at flood height. The Ottawa river over a week ago was rising at the rate of a foot a day and came within a few inches of flooding out the new pulp mill of the E. B. Eddy Company. Water conditions, unless an unusually dry summer sets in, should be ideal this year for power users on the Ottawa and tributaries.

CORK FORESTS.

The cork oak is a kind of jack at all trades among trees, and its service indicates well the kind of new freedom that trees may give us by their new helpfulness if we will just give them a chance. If the garden of Eden story had been written in Spain or Portugal I think the fortunate couple would have been placed in possession of a cork forest. If a man in either of these countries has a forest of good cork trees you will find him in Madrid, Lisbon or Paris. His cork forest works for him, and he stays in town.

Cork trees grow on the rockiest and poorest land. The poorer the land the finer the quality of the cork. Every eight or ten years the outer bark is stripped from the trees to furnish the ever more highly prized cork of commerce. By dividing the land up into blocks this decennial harvest will produce a fairly regular income.

These same oak trees produce acorns, often heavily, which are sold to some farmer, who drives his herds of lean hogs into the forest, where they harvest the acorns and turn them into salable meat. A Portuguese hog is expected to gain two pounds a day for ninety days when acorns are ripe.

More than this, there is beneath the oak trees some herbage fit for goats to eat. Thus the cork forest owner in Lisbon gets income from three contractors — the cork stripper, the pork raiser and the goat raiser. And with care the forest lasts forever. The individual cork tree is good for a hundred years or more, after which it is a fine big salable tree, with enough young ones near it to take its place when it is gone to market. In Portugal a cork tree, ready for its third stripping, is considered worth \$25. When in full bearing an acre of these oaks will yield from one to three tons of cork, at a stripping, now worth about \$70 a ton to the grower. Most of this is profit. The pork is profit. It is the common rule that the income from the pasture pays the small cost of caring for the forest.—J. Russell Smith in Country Gentleman.

THE PROGRESSIVE JAP.

It is reported that a company with a capital of 3,000,000 yen (about \$1,500,000) has been organized in Karafuto, the peninsula of northern Japan, to manufacture wood-pulp. It is planned to erect a factory capable of turning out 12,000 tons of pulp a year since felling rights over large timber tracts have been obtained.

PAPER.

From time to time, almost from the very earliest days of the war, there has arisen in many European countries a shortage of paper. Many factors, often unlooked for, have contributed to bring about this result, a scarcity of labor, the increased cost of shipping freights, and deficiency in the supply of the many and various ingredients which go to the making of paper, in all its many forms of to-day.

A story is told of how, something more than eleven hundred years ago—to be precise it was in the year 751—a Chinese force marched on Samarkand, which for some years had been occupied by the Arabs, thinking to take the city and expel the intruder. The Arab governor, however, was an able general, and marshaled his men well. He not only repelled the invasion, but took up a vigorous pursuit of the invaders. He captured prisoners. Amongst them he found men who were skilled in the art of making paper, and that was the beginning of it. The craft quickly spread throughout the Arab dominions and, in process of time, trade brought the products to Greece. Theophilus presbyter, writing about that time, speaks of the paper as Greek parchment, and there is a record that the Empress Irene used it for the framing of certain rules for the nuns of Constantinople.

It was only the paper, however, that came, and not the art of making it. This was first introduced into Europe by the Moors, also about the twelfth century. They held a great part of Spain in those days, and the industry quickly grew. It was good paper, "cloth parchment" it is styled in the laws of Alfonso of 1263, and well suited, for it was stout of substance, and could withstand much hard use. At Xativa, Valencia and Toledo the industry grew and flourished until the fall of the Moorish power. And then came a change. The Christian conquerors were less skilled, and the great industry deteriorated, both as to quantity and quality. Meanwhile, however, the Arabs had brought their knowledge of the craft with them when they invaded Sicily. The oldest known document on paper is a deed of King Roger of Sicily, bearing the date 1102. From Sicily paper making ultimately spread to Italy, and there it became a great industry. From Italy it extended to France and Germany. In 1297 Pace de Fabriano was making paper, in Italy, from rags and flax, and, a short time afterwards, regular mills appeared in Padua and Treviso. Ninety years or so later, the famous Stormer is setting up his paper mills in Nuremberg, and taking an oath, of truly awesome solemnity, from his men that they will keep secret his processes.

And then the art reached England, and, in Wynkyn de Worde's "De Proprietatibus Rerum," printed in 1495 at Caxton's Press, we find mention of a paper mill at Stevenage in Hertfordshire, kept by one John Tate. Master Spielman, with his ten years' license from Queen Elizabeth to make paper at Dartford in Kent, is the next great figure in the English paper trade, and so on to the establishment of the famous mills at Maidstone, where John Whatman turned out his paper in and around the year 1760. In 1799 came machinery, and, from the small mill at Boxmoor in Hertfordshire, where Fourdrinier, the inventor, first set up his plant, the industry spread all over the country. With the repeal of the paper duty, in 1860, the long story of paper making reaches our own times.

TO USE ONLY CANADIAN WOODS.

The Dominion Government has decided to exclude all Foreign lumber in connection with the public work carried on by the Government. At the present time the Parliament buildings at Ottawa are being rebuilt, but only Canadian lumber and timber will go into the new structure. A short time ago the Canadian Pacific Railway Company issued a similar order in regard to their building. Both movements have been made for the purpose of encouraging the lumber industry of the Dominion, but is likely to be severely felt by American lumber exporters.

Last year although the country was at war, Canada imported 95,000,000 feet of Southern pine, valued at over \$3,000,000. These figures were much below those of previous years, but show something of the heavy importations of pine from the United States. Practically all our hardwood has been imported from South of the Forty-Ninth Parallel, but according to the new arrangement, only Canadian hardwoods will be utilized in the Public Works of the Dominion.

At the present time a number of important Government works are going on in addition to the rebuilding of the Parliament Buildings at Ottawa. Harbour improvements are taking place at Montreal, Quebec, Toronto and also in connection with the Hudson Bay terminals. In these works Douglas Fir will take place of the Southern pine formerly used. For the interior decorations of cars and the wood utilized in their manufacture, Canadian woods will hereafter be used to the exclusion of American forest products. It is said that the movement will spread and that big implement manufacturers will also utilize Canadian hardwoods to the exclusion of the American product.

SOURCES OF POTASH.

Ashes produced from the burning of birch, beech the maple, and especially the ash from the smaller branches and twigs, contains from one to three per cent of potash. It is a very simple process requiring a cheap apparatus and no complex chemical control to leach the potassium oxide from these ashes. The Syracuse College of Forestry believes it is so simple that any farmer could produce potassium oxide from the fresh ash of twigs, branches and other parts of such hardwood trees as the beech, birch and maple.

WAR AND FOREST FIRES.

Canada is at war and the enemy has to be fought on land and on sea in Europe, Asia, Africa, and Canada. In Canada we must fight among other ways by keeping our production of necessities up to the highest point and by conserving our resources. One of our most valuable resources is our forest wealth. Timber will be in demand to rebuild ruined Europe and to carry on our own developments, made more strenuous by the war. If all our forests were to burn down our enemies would be delighted. It would mean the crippling of Canada. Are Canadians going to do anything to delight their enemies? If you who go into the forest do not desire this then do your part in keeping down forest fires this spring and summer by seeing that your camp fire is drenched with water, and that you do not carelessly toss away burning matches or cigar or cigarette stubs before they are fully extinguished. Every acre of forest burned makes it that much harder for the Empire to win the war and delays to that extent our development after the war.

PULP AND PAPER NEWS

S. G. Beatty, who passed away recently in Los Angeles, Cal., in his 73rd year, was formerly one of the best known men in the publishing arena in the Dominion. For many years he was President and Managing Director of the Canada Publishing Co., Toronto. He was also the author of several educational works and is survived by three sons and two daughters.

The International Lumber and Wood Products' Corporation, Limited, have been granted a charter with a capital stock of forty thousand dollars and head offices in Toronto, to carry on in all its branches a lumber, timber, pulpwood and wood products business, and to produce, sell, and deal in logs, lumber and products of wood of all kinds. Among the incorporators are Charles E. Ritchie, F. W. Stockdale, Bertram Rapp and Edward B. Stockdale, all of Toronto.

A charter has been granted to the Great Lakes Power Co., Limited, with headquarters in Sault Ste. Marie, Ont., and a share capital of \$2,600,000, divided into 26,000 shares of \$100 each, of which 6,000 shares are cumulative preference stock. The company are empowered to utilize, develop and construct a waterpower canal for developing hydraulic and hydro-electric, steam and other power, with the right of selling the same to municipal corporations, and incorporated companies and persons. Among the incorporators are Daniel P. McPhail and Kenneth McK. Wright, contractors of Sault Ste. Marie. It is understood that thirty thousand horse power will be developed and over two million dollars spent in power facilities and improvements.

The Keewatin Power Co. are seeking an injunction restraining the town of Kenora, Ont., from holding back the flood waters of the Lake of the Woods. A writ has been served on the town officials and the proceedings may develop into an interesting law suit.

The Canadian China Clay Co., Limited, has been granted a federal charter with a capital of \$1,500,000 and headquarters in Montreal, to carry on the business of and dealer in china clay and all substances capable of being utilized in connection therewith as well as all products and by-products found on lands bearing china clay.

The Hillcrest Lumber Co., of Renfrew, Ont., is another new organization with a capital stock of \$400,000 which has just been chartered, with power to buy, sell and deal in timber and wood of all kinds as well as timber limits and concessions. James McN. Austin and George B. Ferguson, lumbermen of Renfrew, are behind the enterprise.

Canada has the necessary raw materials and the opportunity of making all kinds of dyes, according to a statement of Dr. M. C. Boswell, professor of organic

chemistry, Toronto University, who gave an address in Toronto recently on "Coal Tar in the Industries." Dr. Boswell denied the statement that Canadian and American chemists had not the knowledge and skill to make dye stuffs, and said that the dye stuff industry on this Continent, had been strangled by a shortsighted business policy which had fostered a demand for the German product. With no financial inducements, Canadian and American chemists had devoted little effort to the production of dyes.

The Hodgson Bros. Chemical Co., with a capital stock of \$200,000 has been incorporated, with head offices in Lindsay, Ont., to deal in vegetable, mineral, wood, liquid and other substances. Among the incorporators are Thomas and W. J. Hodgson, of Lindsay.

For using his official position to get fifty cents more a cord for his pulpwood than was paid to others, and for making use of horses under seizure in a lumber camp in which he was interested, and on other charges, Judge Fitch, county judge at Fort Frances, Ont., has been dismissed from the public service as a result of an investigation held by the Department of Justice of Ottawa.

James S. Douglas, who is secy.-treas. of the Mail Printing Co., Toronto, has been elected a director of the Riordon Pulp and Paper Co., taking the place of the late John G. Riordon, of Toronto. He is a nephew of Charles Riordon, President of the Company, and a son of W. J. Douglas, General Manager of the Mail and Empire. The latter has been spending a few weeks in California.

George Carruthers, President of the Interlake Tissue Mills, has returned from an extended business trip to Chicago, and other western points. He states that all the paper mills are complaining of the shortage of raw materials and business is so brisk with many plants that they cannot begin to fill orders.

The Red Cross Society in Toronto, Hamilton, and other cities have made arrangements whereby several thousand bags will be distributed in residences and places of business. The bags are marked with a red cross and householders and business men are requested to deposit waste paper, rags, etc., in the receptacles which will be called for every two weeks, the trip being made by motors. It is the intention of the Red Cross Society to sell such articles which now command high prices in the rag and paper stock market, and thus the funds of the society will be materially benefited. The Department of Trade and Commerce, Ottawa, has also sent out notices through its Weekly Bulletin stating that, owing to the present war conditions, the demand for rags and old papers has increased to such an extent that all housekeepers would be performing a public duty if they would preserve every scrap of this

waste and communicate with their local rag and waste paper dealers or the Salvation Army. From these, the channels are well established to the larger dealers who will in turn get them into the hands of the manufacturers.

Fred L. Ratcliff, President of the Ratcliff Paper Co., who has been spending a few weeks in the sunny south, has returned to Toronto much improved in health, and is now able to attend to his duties. T. E. Gain, Vice-President of the company, who was laid up a few days owing to illness, is able to be around again.

The Noble Manufacturing Co., of St. Thomas, Ont., manufacturers of biscuits, candies and paper boxes, recently made an assignment. The liabilities and assets are each around two hundred thousand dollars.

H. B. Hart, Managing Director of the British American Wax Paper Co., Toronto has returned after spending five months in England. I. D. Bradshaw, President of Bradshaw's, Limited, manufacturers of wax paper, Toronto, is spending a few weeks in California. His two sons recently enlisted for overseas services.

Fire broke out recently in Toronto in the plant of Brown and Stainton, manufacturing stationers, 77 Bay street, doing damage to the extent of ten thousand. The premises were completely gutted and the Evening Telegram, next door, had a close call.

Alex. Pirie and Sons, Limited, of Aberdeenshire, Scotland, who have always done a large business in the Dominion, have sent out notices to their Canadian customers that an entirely new situation has arisen in the paper trade due to the British Government having proposed to limit the importation of raw materials, which has necessitated a revision of prices and terms. Regarding terms they say, as the suppliers of raw material are asking firms to pay cash before the delivery of the goods and have ceased to allow discounts, this has made it necessary for them to revise the terms to their clients. In future, Messrs. Pirie state that all accounts will be net and that the terms of prepayment will be draft at thirty days sight.

The plant of the Toronto Paper Mfg. Co. at Cornwall, Ont., is closed down for a short time, while the water is out of the canal in order that repairs may be made to the waterway. While the mill is not running it is receiving a thorough overhauling, and several improvements are being made to the equipment.

At the recent toy manufacturers' convention held in Toronto, Sir George E. Foster pointed out to the members the possibility of making toys of all kinds from sulphite pulp, which was much cheaper than brass, copper and other metals, which had risen very much in price owing to their demand for munitions. A toy making industry has recently been established in Berlin, Ont., which is making lighting fixtures from sulphite pulp. The material is subjected to an enormous pressure and then blown into moulds and finished with whatever finish is desired.

The Canadian Churchman, Limited, with a capital of \$40,000, and headquarters in Toronto, has been grant-

ed a charter, and taken over the Canadian Churchman from its former owner, Evelyn MacRae. George P. Woods is President of the new company, and J. M. McWhinney, General Manager of the Union Trust Co., Limited, is treasurer of the organization.

Canada Boxboard Co., Limited, has been granted a federal charter with a capital stock of a million dollars and headquarters in Toronto, to carry on the business of manufacturers and dealers in paper, cardboard, pulp and straw board, and to manufacture the same into boxes, bags, packages, etc.

Howard Smith, President of the Howard Smith Paper Mills, Montreal, who recently underwent an operation in one of the city hospitals, is able to leave the institution and is making good progress toward recovery.

A. G. Pounsford, of Canton, North Carolina, who has been appointed Safety Engineer by the Ontario Pulp and Paper Makers' Protective Association, under the Workmen's Compensation Act will not be able to come to Toronto to take up his new duties until May 1st, having been granted leave of absence until that date.

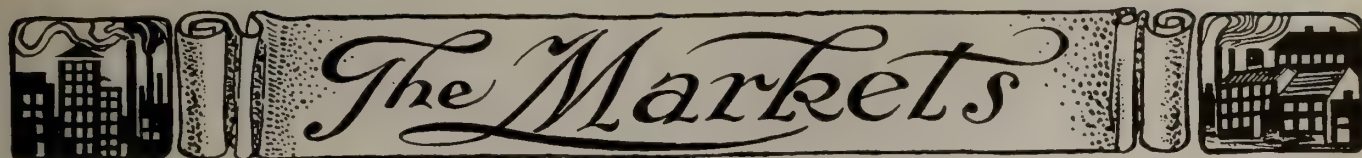
Within six weeks after start was made on the preparation of the plans for the new seventy-five ton sulphite plant of the Mattagami Pulp and Paper Co., at Smooth Rock Falls, Ont., one hundred men were at work on the site. This record of achievement is certainly unique in the history of mill construction. Now a force of nearly two hundred men are employed clearing away obstructions and excavating for the new concrete dam which will be eight hundred feet wide with forty-five foot head. A. G. McIntyre, General Manager of the Company, has the plans all drawn up for a model town site. There will be a public square or park in the centre of the town and facing the open space will be a school, a church, club house, hotel and theatre. Surveyors are laying out streets and location of the various residences, public buildings, etc. It is expected that the plans for the mill will be completed in a few days and construction will commence in the near future. The frost is now out of the ground and the indications are that nothing will delay the progress of the work.

J. J. McNeil, a pioneer lumberman, died at his home in Toronto this week, aged sixty-five years. He was a former Mayor of Gravenhurst when that town was a centre of the lumbering activities and from 1870 until many years after. Mr. McNeil was prominent in lumbering in the Muskoka and Parry Sound district. He came to Toronto in 1897 and was for some time connected with the Spanish River Pulp and Paper Co.

I. H. Weldon, President of the Provincial Paper Mills Co., Toronto, has returned after spending a few days at French Lake, Indiana.

A MODEL MATCH MAKER.

Ohio C. Barber, Cleveland match manufacturer, will present his \$3,000,000 model farm at Barnerton, Ohio, to the Western Reserve University for an agricultural college.



The Markets

CANADIAN MARKETS

"We are in the market for any kind of paper, in rolls or sheets, odd sizes, any colors or quantities and will pay cash upon receipt of the goods. Will you kindly submit samples and prices."

Probably in the history of the Canadian paper trade no such a comprehensive inquiry has ever been received as this. It came from a leading American firm this week and reflects the stringency of the market generally better than any words can tell.

It is not often any journal offers as an excuse for being late that it could not secure in time sufficient paper on which to print, and pleads the scarcity of that commodity as the reason for the delay, yet that is what a well known trade publication did recently. A car load of paper which should have come to hand weeks before could not be secured. This is the story all along the line and another evidence of the seriousness of the situation.

News print mills are operating to their fullest capacity and yet cannot meet the demand. Prices are very firm and have risen from two to four dollars per ton. Inquiries continue to put in from many quarters and as there are no reserve stocks to draw from and mills are running to top speed, all new contracts carry higher rates. An important conference was held recently in New York between producers and consumers to adjust matters as the situation may become very acute, with the result that before many weeks some of the larger dailies may have to reduce their size, the same as they have in the Old Country. A leading authority of the trade recently stated that manufacturers are anxious to prevent any extraordinary increase in price and that quotations will probably not advance beyond the augmentation in the cost of production, no matter how great the shortage of paper to supply existing contracts. All are anxious to prevent an expansion of productive capacity to a point where it cannot be utilized after present conditions of demand are modified and are also desirous of avoiding any move which would stimulate the further investment of capital.

Book mills are pushed to the limit, and the higher prices go, the more orders come rolling in, for there seems to be a universal desire to stock up in view of the uncertainty of the raw material supply and the labor difficulties confronting producers. Now another matter looms up. Book and writing plants in Canada may be required to institute the three tour system the same as several mills on the other side of the line have done. For the third time one of the largest manufacturers in book and writing papers in Canada have withdrawn quotations. There has been an advance of half a cent to one cent in book, the latter applying to the more expensive lines where colors, tinted, writing or programme papers are required, as the wash-up now-a-days means delay in operation and production. Those desiring colored stock must pay accordingly. Coated papers have gone up another half cent and on coated blanks and cardboards there has been another jump which will average twenty per cent.

The sulphite situation is a trying one and several plants have their output sold for weeks ahead and as high as seventy dollars has been paid at the mill for easy bleaching, while unbleached figures around \$115 and even \$120, and kraft pulp anywhere from \$70 to \$75 per ton.

In the West owing to the three tour system sulphite mills have been enabled to run until twelve o'clock on Saturday nights instead of noon on Saturdays thus increasing the output by about ten per cent, but this is only a drop in the bucket, so to speak, in view of the limited receipts from abroad and the enormous demand.

Toilet and tissue plants are sold up for weeks ahead and many tempting orders at attractive prices and in favorable lots have been turned down. Mills in all lines are doing their very best to meet the numerous requisitions and are catering to their customers on a pro rata basis; that is according to the amount of business which they gave each mill last year. All bookings are made on the prices which may prevail at the time of delivery as the producers must take every precaution to safeguard their own interests. The country is being scoured for rag and paper stock and the Canadian family is being urged to establish the old "rag bag" which held sway a few years ago. Columns might be written on the situation as a whole, but the future is so uncertain that such comment would be purely of a speculative character, the same as prophecies regarding the date when the war will end.

No member of the industry imagines for one moment that the existing state of affairs will go on forever as conditions are abnormal and the manufacturers are facing a state of affairs such as has never been known in the history of the trade. "I have been thirty-five years in the paper business," remarked an old timer this week, "and I have never seen so many orders come in for such large quantities, unsolicited, as at the present time. All are clamoring for paper and jobbers could do a much larger trade if they could get deliveries of the kinds desired. Some customers are most unreasonable in their exactions, but on the whole the majority understand just what the mills are up against in stock and labor and the augmented cost of the upkeep of machines."

One leading British firm have notified their Canadian customers, in consequence of the restriction of imports on raw materials imposed by the government, that deliveries against all orders and contracts on hand have been reduced by one-third and prices are now adjusted to meet the new conditions. All deliveries from now on are subject to the regulations issued by the Royal Commission on paper, and orders are executed on the understanding that customers take responsibility for complying with these regulations in disposing of paper. Another firm of Scottish paper makers, who have for years sent a representative to Canada once and twice a year, have notified the trade in the Dominion that due to the constant depletion in their staff occasioned by enlistments, the recent restrictions in the importations of raw materials and the abnormally high prices

prevailing, they will have to discontinue catering to Canadian customers, but in the case of special inquiries will be glad to submit the best price possible under the circumstances.

Poster paper has gone up from four cents to five and a half, making the third advance since the first of the year. Red and green crash and linen finish cover papers have ascended from five to ten cents and golden rod, light blue, dark and light brown from five to nine cents owing to the scarcity of colors and stock, while tints which a few weeks ago sold at five cents have increased to seven cents. The better class of Bristols are now seven cents, while the lower grades have jumped to six cents. The former was until recently five and a half cents, and the latter three and one quarter cents. Manila tag, which was three and one quarter cents, is now four. Sulphite tag and envelope paper, which was four and a half is quoted at five and a half. The figures for all kinds of board, which went up fifteen per cent some time ago, are practically not quotable to-day, for mills will only book order for delivery several months hence, and at whatever figure is then prevailing. All box and board factories are exceptionally busy.

Coated paper mills have sent out notices that owing to the continued advance in the price of raw materials and the scarcity of all ingredients and supplies, they are obliged to alter quotations for current orders. The prices quoted are for immediate shipment only and subject to change without notice — according to existing market conditions.

	Mill ship't ton lots or more.	Case lots.	Less than case lots.	Broken reams.
Coated Book	7 $\frac{3}{4}$	8	8 $\frac{1}{2}$	9
Porcelain Book	8 $\frac{3}{4}$	9	9 $\frac{1}{2}$	10
Suede finish white coat- ed book	10	10	10 $\frac{1}{2}$	11
Suede finish tints India 11	11	11	11 $\frac{1}{2}$	12
Suede finish tints grey 11 $\frac{1}{2}$	11 $\frac{1}{2}$	11 $\frac{1}{2}$	12	12 $\frac{1}{2}$
Tinted coated book	8 $\frac{1}{2}$	8 $\frac{1}{2}$	9	9 $\frac{1}{2}$
Duplex covers	10 $\frac{1}{2}$	10 $\frac{1}{2}$	11	11 $\frac{1}{2}$
Coated litho	7 $\frac{1}{2}$	7 $\frac{3}{4}$	8	8 $\frac{1}{2}$
Enamelled blotter	13	14	15	15
Coated bond	15	15	16	17

Since this notice was sent out half a cent has been added to all the foregoing lines.

Paper houses have sent out notices that the prices on kraft papers are as follows:

	Mach. finish.	Mach. glazed
Carload and jobbers	5c	6 $\frac{1}{2}$ c
One ton	6 $\frac{1}{2}$	7c
Half ton	6 $\frac{3}{4}$ c	7 $\frac{1}{4}$ c
Small lots	7c	7 $\frac{1}{2}$ c

Here are the latest quotations of one leading mill to the trade on various lines:

	Jobbers.	Mill orders.	Stock.
Grey Rag	\$3.00	\$3.25	\$350
Dia. Manila	3.50	3.75	4.00
No. 1 Manila	4.25	4.50	5.00
Fibre, 30 lb.	4.25	4.50	5.00
Fibre, 108 lb.	4.50	4.75	5.25
Kraft	6.00	6.50	7.00
Env. Manila	4.25	4.50	5.00
Tag	4.00	4.25	4.50

Toronto quotations are:—

Paper.

News (rolls), \$2.10 up, at mill, in carload lots.
 News (sheets), \$2.30 up, at mill, in carload lots.
 Book papers (carload), No. 3, 5.50c.
 Book papers (ton lots), No. 3, 5.50c to 6.25c.
 Book papers (carload), No. 2, 6.00c to 6.50c.
 Book papers (ton lots), No. 2, 6.50c up.
 Book papers (carload), No. 1, 6.50c to 7.00c.
 Book papers (ton lots), No. 1, 6.75c up.
 Sulphite bonds, 6 $\frac{1}{2}$ to 8c.
 Writings, 6c. up.
 Grey Browns, \$2.75 to \$3.50.
 Fibre, \$4.00 to \$5.50.
 Manila, B., \$3.00 to \$4.00.
 Manila No. 1, \$4.25 to \$5.50.
 Manila No. 2, \$3.75 to \$4.50.
 Unglazed Kraft, \$6.00 to \$7.00.
 Glazed Kraft, \$6.25 to \$7.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, unbleached, 60c to 1.00c.
 Natural greaseproof, 10c to 14c.
 Bleached greaseproof, 15c to 20c.
 Drug papers, whites and tints, 6c to 8 $\frac{1}{2}$ c.
 Paper bags, Manila, 50, 10 and 5 discount.
 Paper bags, kraft, 40 and 5 discount.
 Confectionery bags, 33 1-3 discount.

Pulp.

Ground wood pulp (at mill), \$17 to \$19.
 Ground wood, \$20 to \$25, delivered.
 Easy Bleaching Sulphite, \$70, del.
 Sulphite, news grade, \$65 up, delivered.
 Sulphite (bleached), delivered, \$1.15 up.
 Sulphite, delivered, \$70 up.

Quotations f.o.b. Montreal are as follows:—

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$50 per ton for small orders.
 Ream News, \$45 to \$47 per ton for large orders; \$55 to \$60 per ton for small orders.
 No. 1 Book, 5 $\frac{3}{4}$ c to 7c.
 No. 2 Book, S.C., \$5.50 in large quantities; \$6.00 in small quantities.
 No. 3 Book, M.F., \$4.50 in large quantities; \$4.75 in small quantities.
 Writings, 5 $\frac{1}{2}$ to 7 $\frac{1}{2}$ c.
 Sulphite Bond, 6 $\frac{1}{2}$ c to 8 $\frac{1}{2}$ c.
 Writing Manila, 5.65 to 6.00.
 Cover Papers, 6 $\frac{1}{2}$ to 10c per lb., according to colors wanted.
 Colored Poster, 6 $\frac{1}{2}$ to 7 $\frac{1}{2}$ c.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs when packed in cases.

Prices on wrappings now in effect:—

	Carload & Jobbers.	Five tons.	Two tons.	One ton.	Under 1 ton.
Cleaver, per 100 lbs.	2.60	2.70	2.80	2.90	3.00
B. Manila, do	3.00	3.20	3.30	3.40	3.50
Samson B. do	3.60	3.70	3.80	3.90	4.25
No. 1 Manila, do	4.00	4.10	4.20	4.30	4.40
No. 2 Manila, do	3.35	3.45	3.55	3.65	3.75
Invincible Striped Man., do	4.00	4.10	4.20	4.30	4.40
Fibre	4.00	4.10	4.20	4.30	4.40
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.					

NEW YORK MARKETS.

(Special to The Pulp and Paper Magazine.,

New York, N.Y., April 6, 1916.

As has been predicted in the past few issues of the Pulp and Paper Magazine, ground wood pulp has advanced and now seems likely to advance still further. Reports show that grinders in all sections of the country are busy, operating at their capacity. The demand for ground wood has been increased steadily, and is now very active. Not only are the regular consumers buying more than their usual quota of stock, but there has been a considerable tendency among manufacturers of sulphite papers to displace, as much as possible, the sulphite pulp with ground wood. A number of grinding machines which have been idle for some time, are now in operation. The prospects for this market are generally considered most encouraging. Just about this time of the year, the mills become troubled with "anchor ice" which generally disables a number of pulp grinders temporarily. If this occurs within the next month, thus decreasing the amount of available stock, quotations will undoubtedly be forced to a much higher level.

The chemical pulp market has advanced remarkably during the past few weeks. While the demand cannot be considered abnormal, for most of the mills are buying only for their immediate needs, the quantities of pulp which can be had for immediate shipment are surprisingly small. In foreign pulps, there appears to be almost an absolute dearth of stock on domestic docks.

The fact is that imports have been so poor that that pulp which has been sold from the Atlantic coast docks, has not been replaced. At the time of this writing, it is understood that there is not more than a two months' supply of foreign pulp in this country available for immediate shipment. Domestic stock for "spot" is also very difficult to obtain, and has been bought at rather high figures. From reports, it seems that most of the domestic producers have sold their outputs, for the current year, and are able only to offer an occasional car of stocks. Indications are that chemical pulps will become even more acute than they now are, within the next few months. It is possible, although not likely, that immediately after the opening of navigation on the Baltic Sea, that prices may ease somewhat, but, in the meantime, a continued strengthening seems assured. Bleached sulphite has advanced beyond any expectation. A sale of two cars was reported at 7c last week. This cannot be considered the market, but it illustrates the fact that buyers, when in immediate need of stock, are compelled to pay a premium in order to obtain it. The market is now regarded as at about 6½c. Opinions are agreed that the "height" has not yet been reached. Unbleached strong sulphite is now quoted at about 3.65c. It is understood that the Scandinavians are asking 4c for unbleached for shipment after the opening of navigation. This would seem to offset the possibility of a lower market, which has just been described. It is also reported that the Swedes are asking 5c for easy bleaching, for shipment after open water. Current quotation here, on easy bleaching is about 4¼c. There is very little of this stock to be had at the present time. Kraft pulp is exceedingly hard to obtain, even at the current high quotation of 4.65c. Large domestic producers, who have generally had considerable stock to offer, are now consuming their entire productions. Imports have been small,

while the general consumption has increased to great proportions. For some time, users of kraft pulp have been operating with very much uncertainty, owing to the difficulty in securing sufficient supplies of raw materials. There now seems to be little doubt that a famine is at hand.

A great reaction occurred in the rag market within the past week. Just when prices were soaring violently and when dealers were buying whatever they found available, a sudden inactivity was felt. This change in conditions followed closely after rumors were afloat that many mills had held a meeting in New England and had declared that they would not pay the monstrous prices which the stock dealers were asking for their goods. It seems that almost simultaneous with the first hearing of these rumors, the activity of the market ceased. The manufacturers who had been around the city seeking stocks of all kinds, no longer showed any desire to buy and even refused to consider offers. In roofing rags, a big drop in price followed. Reports were circulated that the roofing mills were planning to buy through one purchasing agent. This caused a number of dealers to become fearful and offer out lots at lower prices. Many of the stock dealers are convinced that this break is only a temporary one, and they are holding fairly firm to the high market. They believe that few, if any of the mills have large supplies, and that with all of the plants operating at full capacity, it can only be possible for them to remain out of the market for a few weeks at the most. Roofing rags which were selling at about 5c have dropped to lower than 3c. Manila rope seems to have been sorely affected also. The demand for rope, which was very urgent, has eased surprisingly and prices which were ruling firm at about 7c are now as low as 5½c with indications of going lower. Bagging, however continues to hold its own. Despite the large imports from England, the market is firm and advancing. Gurry is quoted at 4c; bright bagging at 4⅞; sound bagging at 3¾c; mixed bagging at 3¾c; light wootares at 3½c and heavy wootares at 3½c.

While many grades of waste papers continue to advance, book and magazine stock have been affected from a movement said to be similar to that which is believed to have occurred in rags. A number of the mills in the Kalamazoo section, which were in urgent need of stock, especially book and magazine, are reported to have completely "dropped" out of the market. The result was that magazine stock, which had gone up to 2.75c, dropped to below 2c. Mixed papers have been moving very well and have advanced to higher than 1c a pound. The cause for this is due to the fact that the roofing mills have entered the market and are competing with the board manufacturers for this stock.

From present appearances, mixed papers will go still higher. Strictly overissues are held at about 1 to 1¼c; strictly folded is worth .90 to 1.00c. Old krafts are still in good demand at about 3 to 3¼c. Bogus wrappers are held at about 1c. Hard white shavings are firm at about 3½ to 4½c; soft white are quoted at 3¼ to 3½c. Old manilas are selling fairly well at about 1 to 1½c. It is believed that while a lull may be experienced in some grades, it will be but for a short time.

In the paper market, a most unusual condition exists. Practically all of the mills are so filled with orders that they are unable to take business for delivery, even within a few months. At this time, with the demand for all kinds of stock, the jobbers are feeling the situation keenly. It is an actual fact that it is impossible to

place orders for many grades, simply because the mills are "booked clean up." Many mills, in order to protect themselves, are taking orders without date of delivery specified, with the understanding that the market price at time of delivery is to be charged. Last week, notices were issued by the various writing manufacturers, advancing 50 per cent on all grades under 15c, and 40 per cent on all grades over 15c. The freight congestion is still acute and continues to do much in holding stock from getting into the market. It is understood that there is absolutely no newsprint now available, except on old contract. Mills are finding it difficult even to take care of contracts and are helping each other out. It seems that a crisis has actually been reached in this market.

Wrapping papers of all kinds are now hard to obtain. Manilas and fibres in all grades are unusually active. The fact is that business has been so brisk that some of the larger mills have found it advisable to withdraw from the market. It is understood that jute manila cannot be had under 10c. Wood manila has been sold at about 4½c. In grafts, the situation has been constantly growing worse. There is practically no market for this material to-day, for there is little to be had. As high as 8½c have been paid for small lots. Paper bags are very active, with prices high. So great is the demand that the factories are not in a position to really take on new business. Book papers have been advancing constantly. The mills are busy and are not encouraging new business. Boards are chaotic — without limit. The mills are busy and appear to be taking orders from the highest bidders. Ridiculously high premiums have been paid to get prompt shipments of boards.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$22.00 to \$24.00.
Ground Wood No. 2, \$18.00 to \$22.00.
Unbleached Sulphite, dom., 3 to 3¼c, delivered.
Easy bleaching impt., 3.25 to 3.65c, ex-dock, N.Y.
Bleached Sulphate, impt., 4c, ex-dock, N.Y.
Bleached Sulphite, impt., 5 to 6c, ex-dock, N.Y.
Unbleached Sulphite, impt., 3.10 to 3.35c, ex-dock,
New York.
Kraft Pulp, impt., 3.65 to 4c.

Paper.

News, Rolls, transient business, 2½c and higher.
News, Sheets, \$2.30 to \$2.45, f.o.b.
News, Rolls, contract renewals, \$2.20 to \$2.50, f.o.b.
News, side runs, \$2.25 f.o.b.
Book papers, car lots, S. & S. C., \$60 to \$65, f.o.b.
Writing paper, extra superfine, 14c. to 17c., del. east
of Miss. River.
Writing paper, superfine, 13 to 15c, del. east Miss. R.
Writing paper, No. 1 fine, 10c, del. east Miss. River.
Writing paper, No. 2, fine, 9½c, del. east Miss. River.
Writing paper, engine sized, 7½ to 11c, east Miss. R.
Bond paper, 6½c to 24c, delivered east of Miss. R.
Ledger paper, 6½c to 25c, delivered east of Miss. R.
Linen paper, 9c to 18c, delivered east of Miss River.
Manila jute, 6c, delivered.
Manila, wood, 4½c, delivered.
Kraft No. 1 (dom.), 7½c, f.o.b., New York.
Kraft, No 2 (dom.), 5½c, f.o.b., New York.
Kraft, imported, 7½c, ex-dock, New York.

Boxboards, news, \$47.50 per ton, delivered.
Wood pulp board, \$50 per ton, delivered.
Boxboards, straw, \$41 per ton, delivered.
Boxboards, chip, \$45 per ton, delivered.
Tissue, fourdrinier, 65c, f.o.b., New York.
Tissue, white, cylinder, 70c, f.o.b., New York.

THE FOREST'S PRIME-EVIL.

(By Jas. Lawler.)

A man there was and he let his fire
Burn down his neighbor's shed
But he was tried and sent to jail,
And "Served him right" they said.

Oh years he spend at breaking stone,
And he sleeps on a soft plank bed
For carelessly burning his neighbor's fence
And his fifty dollar shed.

A man there was and he let his fire
Burn down a forest wide.
Millions of dollars went up in smoke—
Thousands of animals died.

Settlers rushed from burning homes,
Some were burned in their beds
And to-day o'er the place where this was done
A death-like desert spreads.

And the man went back to his distant home
With a buck and a hunting tale,
And none of the neighbors rose to remark
That he ought to be sent to jail.

A fool there is and his name is US
As the blindest man can see.
If its jail for the man who burns a shed
While the burner of forests goes free.

INCREASED LABOR COSTS.

President of American Paper & Pulp Association stated a few days ago that munitions manufacturers, by offering high wages and hiring armies of men, have raised labor costs to every other manufacturer in the country. Increased paper prices do not mean increased profits, as raw materials and labor are much higher.

AYERS LIMITED

Lachute Mills
P.Q.

Established
1870

FELTS



For
Pulp and
Paper Mills

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.

Air Compressors:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Cahadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Digester Lining:

Advace Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Drainer Bottoms:

Snell, Samuel, Co., Holyoke, Mass.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Mass.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 Crookes, Roberts & Co., Sheffield, Eng.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
 Carthage Machine Co., Carthage, N.Y.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Norwood Engineering Co., Cowansville, P.Q.
 Progress Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada.

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Fox, Stockell & Co., London, England.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

MILL SUPPLIES---Continued

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Stuff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Process Engineers, Ltd., Montreal, Canada.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.
 Process Engineers, Ltd., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Darling Bros., Montreal, P. Q.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Jones & Glassco, Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 Northern Crane Works, Walkerville, Ont.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Smith, S. Morgan Co., York, Pa.
 Voith, J. M. Co., Inc., New York, N.Y.
 Voith, J. M., Wurtemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Smith, S. Morgan Co., York, Pa.
 Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.
 Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Taylor, J. A., Montreal, Canada.
 Westbye, P. P., Peterboro, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.
 Carthage Machine Co., Carthage, N.Y.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machinery Co., Sherbrooke, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
 Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
 Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
 Booth, J. R., Ottawa, Ont.
 Bronson Co., Ltd., Ottawa, Ont.
 Campbell Lumber Co., Weymouth, N.S.
 Canada Paper Co., Ltd., Montreal, Que.
 Chicoutimi Pulp Co., Chicoutimi, Que.
 Davy, James, Thorold, Ont.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
 Ford, J. & Co., Port Neuf, Que.
 Jacques-Cartier Pulp & Paper Co., Montreal.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Lake Megantic Pulp Co., Lake Megantic, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 MacLaren Co., Ltd., The James, Buckingham, Que.
 McLeod Pulp Co., Ltd., Liverpool, N.S.
 News Pulp & Paper Co., Ltd., St. Raymond, Que.
 Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
 North Shore Power, Railway & Navigation Co., Clarke City.
 Northumberland Pulp Co., Campbellford, Ont.
 Ontario Paper Company, Thorold, Ont.
 Powell River Co., Ltd., Powell River, B.C.
 Price Bros. & Co., Ltd., Kenogami, Que.
 Price-Porritt Pulp & Paper Co., Rimouski, Que.
 Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
 River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
 Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
 Union Bag & Paper Co., Cape Madeleine, Que.
 Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.
 Dryden Timber and Power Co., Dryden, Ont.
 Brown Corporation, La Tuque, Que.
 Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
 Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
 Bathurst Lumber Co., Limited, Bathurst, N.B.
 Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
 British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
 Booth, J. R., Ottawa, Ont.
 Donnacona Pulp & Paper Co., Donnacona, Que.
 Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Powell River Co., Ltd., Powell River, B.C.
 Price Bros. & Co., Ltd., Kenogami, Que.
 Riordon Pulp & Paper Co., Ltd., Montreal, Que.
 Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
 Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
 Lincoln Paper Mills Co., Ltd., Merriton, Ont.
 Ford, J. & Co., Port Neuf.
 Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
 Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Kinleith Paper Co., Ltd., St. Catharines, Ont.
 Provincial Paper Mills Co., Ltd., Toronto, Ont.
 Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

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Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

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Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

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Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

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Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

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Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B. Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

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Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

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Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

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Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
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Trent Valley Paper Mills, Glenmiller, Ont.

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Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

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Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

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Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
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Jonquiere Pulp Co., Ltd., Jonquiere, Que.
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Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

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Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
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Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A	
Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	

B	
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	6
Boving Hydraulic & Engineering Co. Limited.....	6

C	
Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	16
Chambers, Ltd.....	7
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	62
Churchill & Sim.....	
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D	
Darling Bros, Ltd.....	6
DeCew, J. A.....	65
Dean & Son.....	
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54

E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F	
Farrel Foundry & Machine Co.....	11
J. Ford & Company.....	

G	
Glens Falls Machine Works.....	6

H	
Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg. Co.....	14
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K	
Klipstein, A. & Co., Ltd.....	7

L	
Lauderburn, D. E.....	64
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	8

M	
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15

N	
National Paper Co.....	63
Northern Crane Works, Ltd.....	
Norwood Engineering Co. of Can. Ltd.....	13

O	
Ontario Pulp Wood Limits.....	67
Ottawa Car Mfg. Co., Ltd.....	9

P	
Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	61
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R	
Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66

S	
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Scott, Ernest & Co.....	62
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Snell, Samuel Co.....	
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T	
Taylor, J. A.....	62
Ticonderoga Machine Works.....	6
Tippet, Arthur P. & Co.....	13

U	
Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

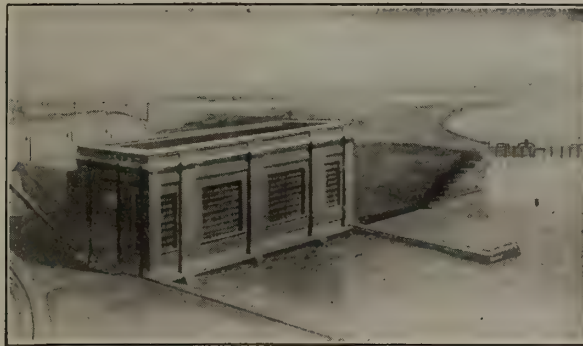
W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	
Westbye, P. P.....	
Wilson-Paterson Co.....	
Winn & Holland.....	
Witting Bros.....	66



Barber Paper Mill, Georgetown, Ont.



Montrose Paper Mill, Thorold, Ont.



Montrose Power Plant, Merritton, Ont.



St. Lawrence Paper Mill, Mille Roches, Ont.



Barber Coating Mill, Georgetown, Ont.

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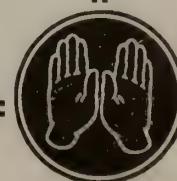
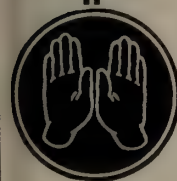
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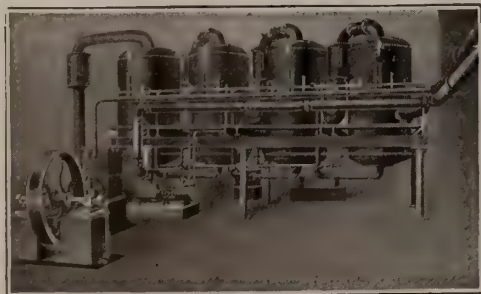
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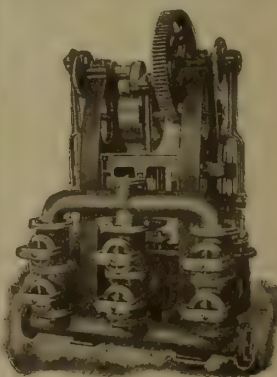


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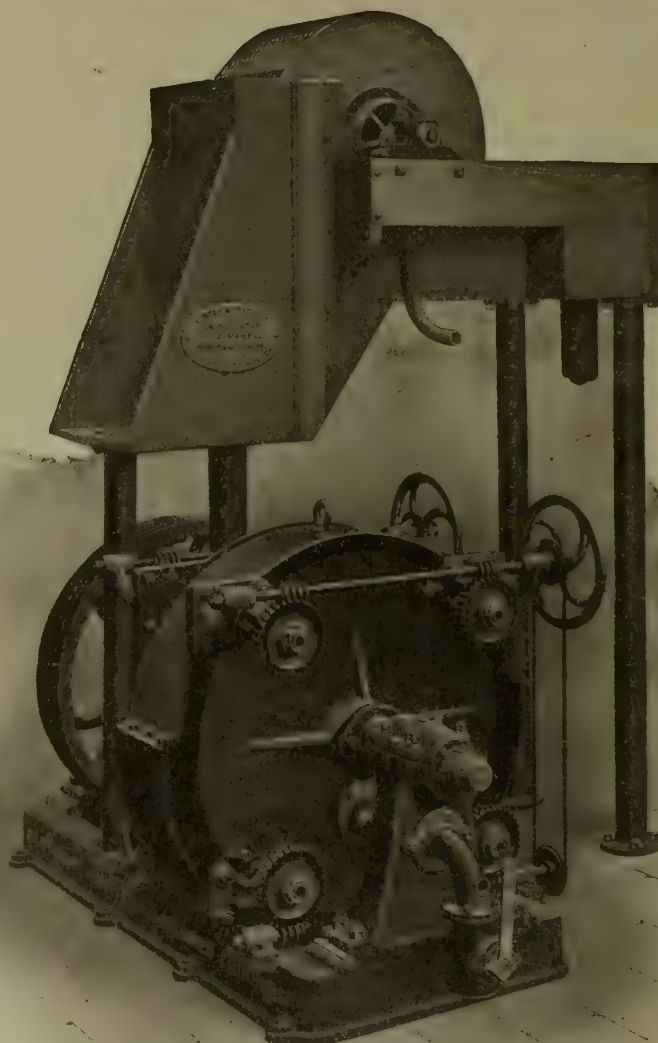
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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owing to the fact that pulp will not pass through the second set of Bars
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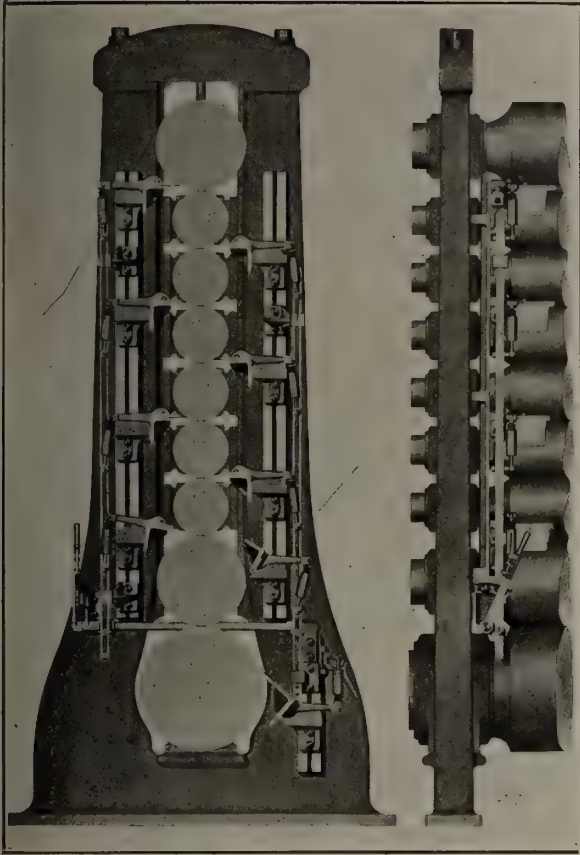
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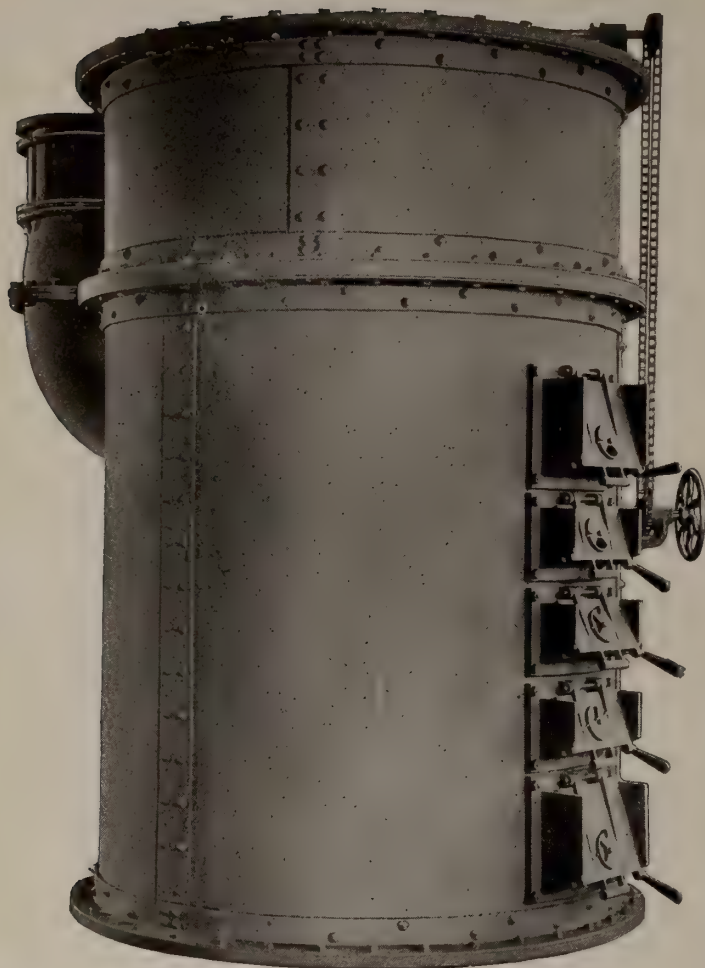
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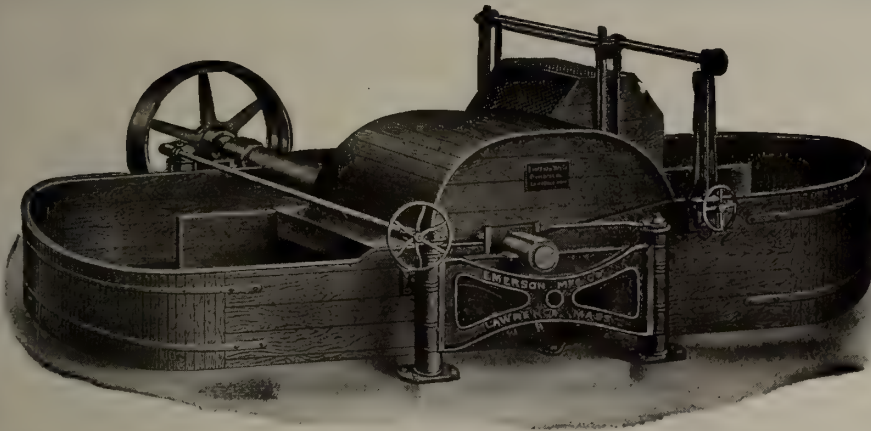
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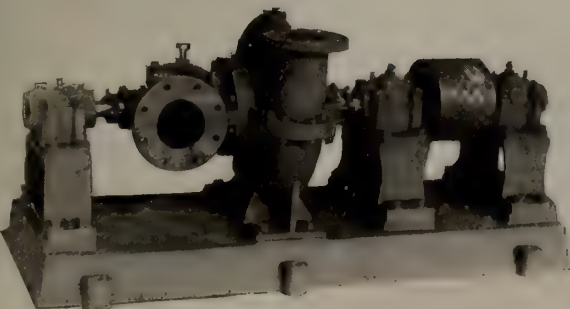
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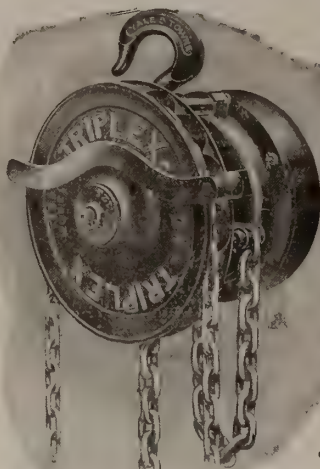
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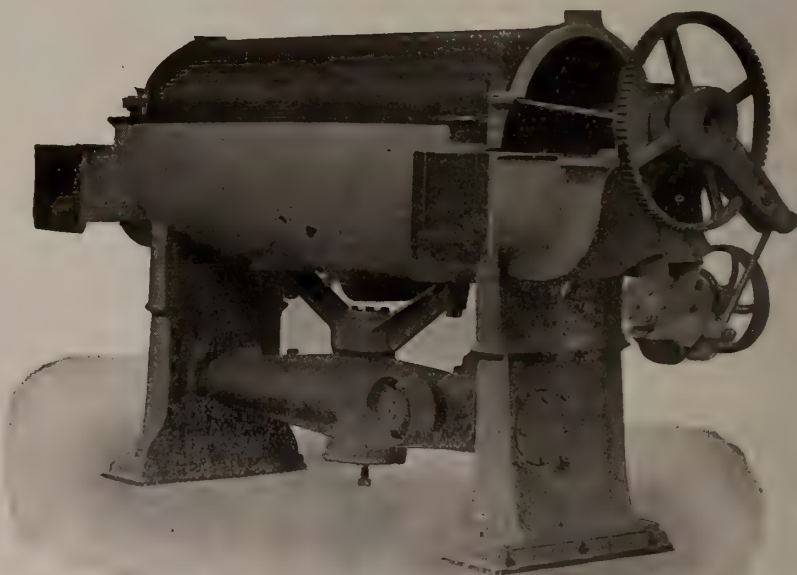
Patent
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Strainer

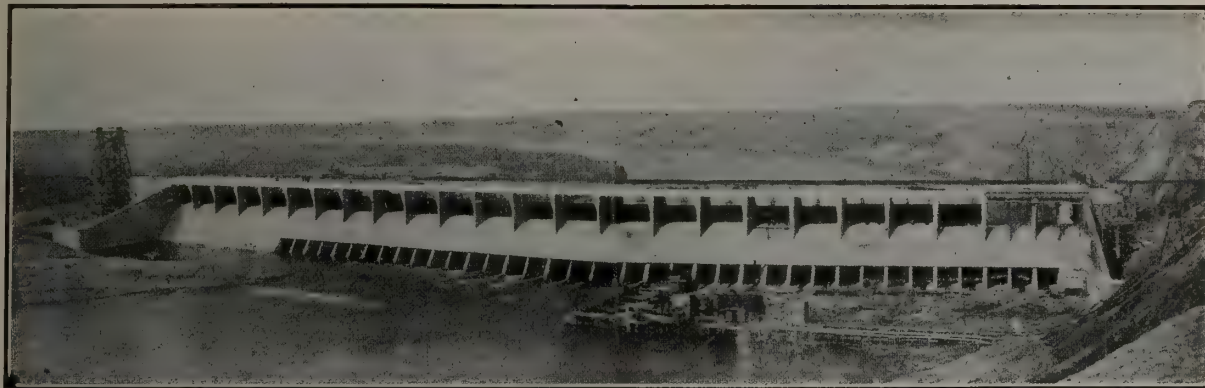
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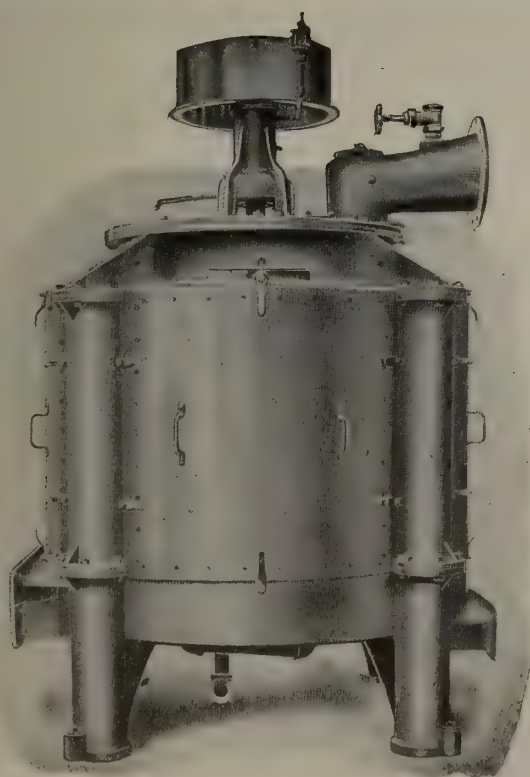
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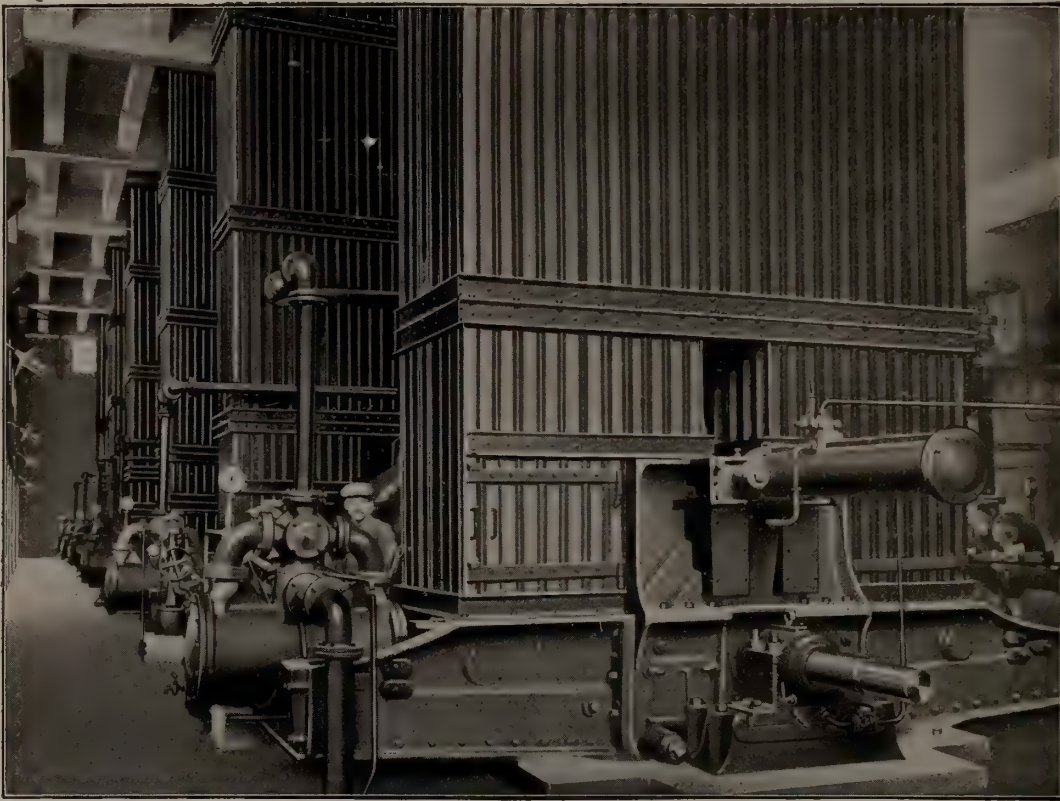
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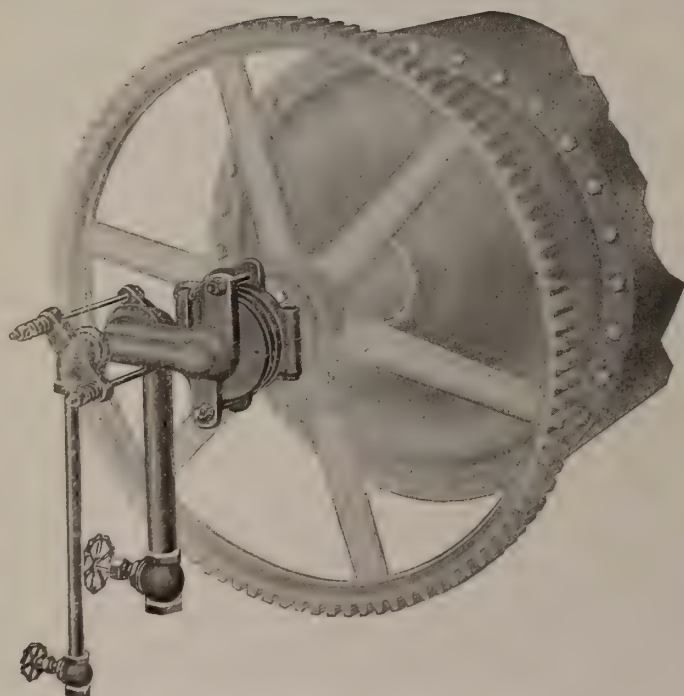
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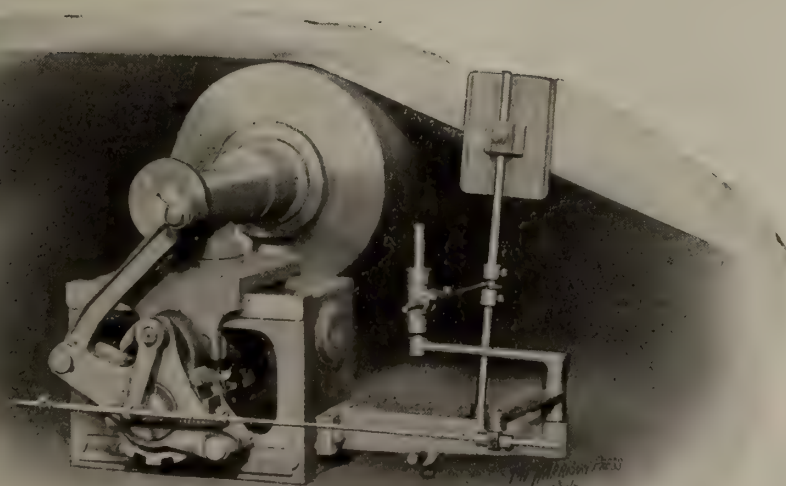
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Single Fender Automatic Wire Guide



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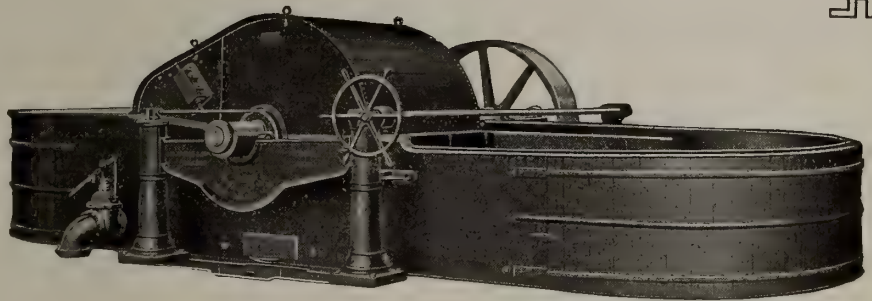
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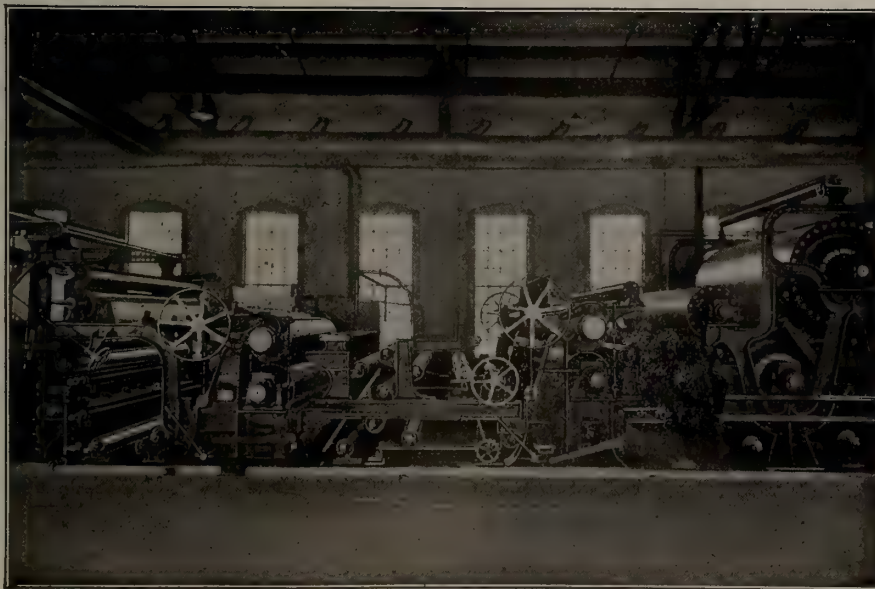
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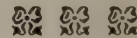
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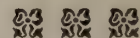
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No. 9

FOURDRINIER WIRES.

President Acer, of the Canadian Pulp and Paper Association, and President Daniels, of the American Paper and Pulp Association, are to be congratulated upon their move in appointing committees who will sit together shortly to discuss the shortage of Fourdrinier wires. A situation has arisen in connection with this most important item in paper mill equipment, which is not pleasant, to say the least. Following unprecedented demands upon the metal supplies of the world outside of the Central Powers, the Allied nations have recently placed orders, it is understood, for over 200,000,000 pounds of copper. The metals consumed by the war are not recoverable at present, and this drain is an absolute loss to the industrial world. It is little wonder, therefore, that the manufacture of brass wire and the weavers of Fourdrinier wires have been hard put to it for supplies.

But the pulp and paper industry should not be allowed to be disturbed by any conditions which have no firm basis. It would be unfortunate if fear of shortage, rather than actual shortage, should play any part in running up the cost of wires, or of causing mills to exercise undue caution in maintaining supplies of wires on hand.

The committees of the two Associations have a most interesting and delicate question before them, but the same spirit of co-operation and of true scientific investigation which has made so many of the Association's enterprises successful, will doubtless bring satisfactory results to all concerned, in this question as well.

A MUNICIPAL RAG MAN.

Still the cry is for waste rags and waste paper! The market has taken a slump recently, but prices still show an advance of ninety per cent and more over normal times.

The Department of Trade and Commerce in Ottawa, and of Commerce in Washington, are both throwing their weight into the campaign for the saving of valuable fibre that apparently has heretofore been destroyed. In America it has been so easy to call upon Europe for rags that we have evidently burned up our fibrous materials without any thought of the economic waste involved.

In Canada, the efforts of Sir George Foster to create public sentiment in favor of the good old rag bag which was a household institution before wood pulp came on the market, are timely and are much appreciated by the paper industry. There is one step more which should be taken. Sir George has already spoken in favor of a plan, which should look to a closer connection between the saver of waste and the consumer of late, women's organizations, patriotic leagues and others have taken up the work of getting the old rags and papers into the hands of the junk dealers. We doubt that unless some very comprehensive plan of government control, municipal or otherwise, is adopted, it would be necessary or desirable to pass over the large dealer in waste. To his sorting tables the rags and paper must go, or there would be an economic waste still greater than at present in the sorting which would have to be done by the consumer. In fact, the consumer could not afford to do it.

But what is needed is a more efficient connection between the householder and the collector of waste. It is only fair to say that the "rag man" constitutes a very poor class of labor. In most cities he is responsible to no one except in a very loose way to the licensing department of the City Hall. To a great extent he makes his own classification of things he sees, and householders sometimes feel that his powers of distinction between things new and things old, between private property and waste are not well developed. Rather than run chances, many citizens burn their waste. The local governments should be rag men for the community, in so far at least as that material which is of no further value to the owner, is concerned. In connection with the scavenging systems there should be an extension of the sorting methods which have been adopted in some cities in the United States. The householder be taught now to make two or three classifications of waste, and the municipal government could carry the process further.

In a time when our wasteful practices are being shown up, Canadian towns and cities could well afford to exercise greater vigilance.

INCREASED DEMAND FOR NEWSPRINT.

Pulp and paper manufacturers are bound to have an increased demand for their products as a result of the strained relations between the United States and Mexico, and the United States and Germany. News print manufacturers will benefit the most largely from the unsettled state of the American Republic. It is well known that Americans are great newspaper readers, and whenever there is a presidential election, a war scare or even a big prize fight, American publishers issue extras and feature the news in a way that is not done in any other country in the world. With the United States army in Mexico and relations between the Republic and Germany at the breaking point, the demand for extras is already showing an enormous increase, and is likely to continue.

It now looks very much as if the United States and Germany would break off diplomatic relations, and probably end in war. Were her people engaged in the titanic struggle and her citizen soldiers fighting on the battle fields of Europe, the newspapers in the neighboring Republic would find it almost impossible to give their readers sufficient war news. Canada is the principal source of supply for newsprint, and makers of paper on this side of the line would immediately benefit from any increased demand from South of the 49th Parallel.

NEWSPAPERS MAY COST MORE.

The sharp advances in the cost of white paper are bringing home some very useful lessons to all connected with the publishing industry. It has often

been said that the people on this continent have been getting their news and their newspapers too cheaply. The readers at one end of the chain did not appreciate the cost of securing the news in their journals. Publishers valued too lightly the white paper, and the manufacturers in turn thought that they had a special dispensation from heaven to cut off the forests of the land at will. There was thus a sort of an endless chain, like the house that Jack built, or the Kansas farmer whose aim in life was summed up in his desires to "buy more land, to raise more corn, to feed more hogs, to buy more land."

Prices of paper have advanced anywhere from 20 to 50 per cent, and in some exceptional cases even more marked advances have taken place. While the war is primarily responsible for this advance in the cost of white paper, there are a number of more closely related factors which have contributed their part. The cost of labor and materials entering into paper making have been showing steady advances. Mills in some cases have paid as high as 10 and 15 cents per pound for bleaching materials, where the price was formerly under 2 cents. Casein, which formerly sold for 6 1-2 to 7 cents, is now 20c per pound. Copper wire for screening is now almost impossible to secure, owing to the demand for this copper for shells. This list of advancing raw materials might be increased indefinitely, but it is sufficient to say that the war has been most widespread in its effect upon the economic side of our ordinary peaceful industries.

The probable outcome of this endless chain of advancing prices will be that the public will be forced to pay an increased price for their newspapers. It will not be a popular move, and unless the newspaper owners get together and present a common front, they will make themselves very unpopular. However, an advance in the price of the ordinary newspapers sold on the streets seems to be the logical outcome of present conditions in the paper trade. In the last analysis the poor public always pays, and there is no real reason why they should not be made to pay in the case of the pulp and paper industry, as in the case of any other.

TECNICAL SECTION MEETING.

It is announced by Dr. J. S. Bates, Chairman of the Technical Section of the Canadian Pulp & Paper Association, that the summer meeting of the Section will be held in Niagara Falls, Ont. on June 30th. next.

While the meeting will perhaps have one or two papers, the principal object will be to facilitate informal and intimate discussion of common problems.

The delegates will visit the mills lying along the Welland Canal in the course of the two days of the gathering. As the Welland district has more mills than any other in Canada and produces practically every class of pulp and paper, the trip will be most instructive.

Definite announcement as to headquarters, programme, etc. will be made in the next issue of Pulp & Paper Magazine.

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The Value of the New Welland Ship Canal to the Canadian Pulp and Paper Industry

By E. R. LOW

(Specially Written for the Pulp and Paper Magazine)

Three years ago, when the Canadian Parliament made an appropriation for the building of a new and larger canal across the Niagara Peninsula between Lake Erie and Lake Ontario, it is very doubtful if the Pulp and Paper manufacturers of the Dominion used very much of their influence in obtaining this appropriation. And yet the benefits which will be derived therefrom by them are many, and will mean a large increase in the growth of the industry in Canada. To the shipping interests must be given the greater credit for bringing to the attention of the people and government of Canada the fact that the commerce upon the great lakes has been stifled by the inadequacy of the canals forming the connecting links of these immense inland seas, and for getting the work of enlarging these trade channels started. Since the construction was started in 1913, however, the pulp and paper trade has begun to realize the importance of the work to them.

The new Welland Ship Canal will be the fourth to be constructed across the Niagara Peninsula, the survey for the first being made nearly 100 years ago, in 1818. The route has been straightened and the canal prism enlarged twice since that time in order to keep pace with the ever-increasing size of the lake vessels and for carrying them up and down the geological formation known as the Niagara escarpment, which formation has caused the world famous Niagara Falls. The New Welland Ship Canal, however, it is hoped,

will never have to be replaced by a larger waterway. It is being built on such a scale to take care of the largest boat, which is liable ever to be constructed for navigation on the Great Lakes, and, as an engineering feat in canal building, it will rank second only to the great Panama canal.

The total length of the canal will be 25 miles, and at the bottom it will have a width of 200 feet. It will extend due north and south in an almost straight line across the peninsula, the south or Lake Erie entrance being about 30 miles west of Buffalo. For the present the Canal reaches will be excavated to a depth of 25 feet, but all stretches will be made 30 feet deep, so that a depth of 30 feet throughout the length of the canal may be obtained at any future time by simply drudging out the reaches. The difference between the level of Lake Erie and Lake Ontario of 325½ feet will be overcome by seven locks, each having a lift of 46½ feet, this being the greatest lift yet attempted in canal building. At one point three twin locks will be built to overcome a descent of 135½ feet. One flight of these locks will be used for down bound vessels and the adjoining flight for up bound, this double flight thus making it possible to overcome delays in passage of boats through the canal, as at Panama.

The locks will be built of concrete. They will have length of 800 feet, will be 80 feet wide in the clear, and will have 30 feet of water over the nitre sills at extreme low stages in the lakes. The lock gates will be

of the single leaf type, swinging on hinges at one side of the lock and resting in a notch in the opposite wall; the single leaf to span the whole width of the lock chamber. The gates will be 83 feet high by 88 feet boat either from Quebec forests to the east or from northern Ontario district to the west. Also for eight months in the year the finished product can be shipped to points east and west by boat, which will en-



View of Concrete Lock Wall on New Welland Canal.

long, weighing approximately 1,100 tons, and will be electrically operated.

The paper mills on the Niagara peninsula will naturally benefit to the greatest extent by the building of the new waterway. These mills are so situated that they can obtain very cheap electric power from Niag-



Unloading Wood for the Ontario Paper Co. at Thorold, Ont.

able these mills to more easily compete with others nearer the market centres.

At the present time there are 13 mills in the Welland Canal district, with a total capacity of approximately 429 tons. This is divided as follows:



Lock Walls under construction, New Welland Canal.

ara Falls, and are at a point in Canada nearest to the coal fields of the United States, and can therefore secure this necessity at the lowest cost of any place in the Dominion. Some of the mills are so located that they also have their own water power from the old Welland Canal. The new canal will make it possible for them to bring in their wood supply cheaply by



Bed of Old Welland Canal Showing Montrose Mills of St. Lawrence Paper Co.

Book, bond and writing	41 tons.
Tissue	12 tons.
Craft, Manila and Wrapping	25 tons.
News	120 tons.
Wood Fibre Board	60 tons.
Ground Wood	141 tons.
Sulphite	30 tons.

The completion of the new canal will see these mills enlarging, and in fact one has plans ready for starting work on a new sulphite plant this spring, while another has buildings large enough to take care of machines for doubling its output. There are numerous excellent manufacturing sites along the course of the canal, and it is highly probable that new paper mills



Beaver Wood Fibre Co. Ontario Paper Co. in background.

will take the opportunity to locate here, so that in the very near future this section can boast of being one of the leading pulp and paper districts.

On the other hand, the more mills that locate along the Welland, the more will those in the St. Lawrence district benefit. Vessels which bring pulp wood up from Quebec will seek cargoes of coal for the return trip, and although during the spring and fall the great bulk of east bound traffic will be in grain, the mid-summer season will produce an abundance of boats willing to carry coal. In the same manner boats carrying coal to the west from Buffalo and Cleveland will return with wood from the Georgian Bay district.

It is true that for some time the small locks of the St. Lawrence River canals will be a handicap to lake traffic and compel the eastern trade to be content with



Kinlieth Paper Co., St. Catherines, Ont.

the older and smaller boats, but when the New Welland Ship Canal is finished, Canada will realize the necessity of building deeper canals in the east in order to complete the chain of deep waterways connecting the Great Lakes. By this means the Atlantic Ocean will practically be brought into the heart of Canada, and it is predicted that the present generation will see ocean vessels coming into the lake ports for shipments of pulp and paper to all parts of the world.

Southern Pine as a Source of Supply for Paper

The immense possibilities of developing southern pine and Douglas fir sawdust and other waste into wrapping papers have been reviewed for the members of the United States Senate committee which has under discussion the proposal to increase the scope of the laboratory investigations, in the following memorandum on the production of Kraft wrapping paper from southern pine and Douglas fir by Chief Forester Henry S. Graves:

Kraft Wrapping Paper from Southern Pine — The waste incident to the production of southern pine lumber is of sufficient quantity to produce the enormous amount of approximately 20,000 tons of paper per day. Laboratory experiments have determined the suitability of this material for the manufacture of Kraft wrapping paper by the sulphate process and it now only remains to determine to what extent the laboratory results are applicable on a commercial basis.

Kraft Wrapping Paper from Douglas Fir — What has been said of the possibilities of southern pine is largely applicable to Douglas fir. While the laboratory experiments with this species have not progressed to the same point as with the southern pine, the indications are that Douglas fir is also well adapted for production of Kraft paper and subsequent to the completion of the suggested work on pine, it would be my idea to utilize the experimental equipment secured for this purpose in similar work in the West from Douglas fir. Wrapping paper in this territory is at present secured from either western paper mills using sulphite pulp or from eastern and European mills supplying either sulphite or Kraft wrappings. In the latter case, it is of course necessary for the western consumers to pay freight charges amounting to about \$15 per ton. The laboratory recently made paper of Douglas fir which tested a point to a pound, putting it in the class with the strongest wrapping papers made in the United States.

A PROGRESSIVE NUMBER.

A progress and prosperity number of the Kingston Whig has just been received. The number contains 56 pages, of which 26 are devoted to advertising. A unique point in connection with the edition was the fact that it was turned out in its entirety by the business office, the editorial department not being called upon to do any work in connection with it, either editorially or in any other particular. The Kingston Whig is to be congratulated on the excellency of their company.

JEFFREY MFG. CO. EXPANDING.

The Jeffrey Manufacturing Company of Columbus, Ohio, have recently organized a Contractors' Plant Department to handle the sale of a line of small rock and ore crushers. Mr. Leroy A. Kling, formerly Sales Manager of the Road Machinery and Limestone Crusher Department of the Wheeling Mold and Foundry Company, will be in charge of this department. Doubtless the Jeffrey Company will make as much of a success of this line as they have of all the other lines they have undertaken.

The Mechanical Filtration of Water

By ARTHUR M. CRANE

of the New York Continental Jewell Filtration Co., before the Pulp and Paper Society of the University of Maine

We may well say that next to the raw material water is the most important requirement in making paper. Speaking broadly paper can be made without elaborate machinery, but you cannot make paper without water. And so it is that water has always influenced the selection of a site for a paper mill. Years ago it was not difficult to locate on a waterway from which an abundant supply of clear water could be obtained. But with the increasing pollution of streams, coincident with the growth in population and of the industries, a suitable place became more and more difficult to find and many mills were forced into remote quarters. Many convenient locations for a paper mill lack only a suitable water supply. Furthermore, many places where the supply is normally clear are subject to floods and freshets which load it with mud and necessitate a shut-down until the discoloration disappears. And many places where the supply was originally satisfactory have in recent years suffered from the contamination given by the water waste of other mills. All of these things, therefore, make it quite fitting that paper mill engineers should consider the subject of water purification. And this seeking for a better water is by no means a new ambition on the

part of mankind, for in the 19th Verse of the 2nd Chapter of the 2nd Book of Kings will be noted the following:

"And the men of the city said unto Elisha, Behold, I pray thee, the situation of this city is pleasant, as my lord seeth; but the water is naught, and the ground barren.

And he said, Bring me a new cruse, and put salt therein. And they brought it to him.

And he went forth unto the spring of the waters, and cast the salt in there, and said, Thus saith the Lord, I have healed these waters; there shall not be from thence any more death or barren land."

These words of Holy Scripture show that the purification of water is an old subject. Scientists see in this passage a clear reference to coagulation by the use of a chemical salt, such as alum. This is the very essence of mechanical filtration as we have it today. Hippocrates, back in 440 B. C. wrote of methods employed by the ancients. And sedimentation with the use of alum was practised by the Chinese long before the Christian era. So it is not a new science with which we have to deal, but rather only its present form.

It will be unnecessary for us to spend much time in considering the necessity for the filtration of water under certain conditions and for certain purposes, if we keep before us the basic fact absolutely pure water is seldom found in nature. It is quite pure at the moment of condensation in the clouds, but it soon becomes contaminated or impregnated with foreign substance in its passage through the air and contact with the earth. In performing its duty of giving our old world a scrubbing it picks up a lot of impurities, representing in one form or another the constant de-

composition of man himself. So it is no wonder that Nature's own drainage canals should be veritable sewers.

All this, then, shows us how reasonable is man's repugnance to using a river water without filtration; and how kind old Mother Earth is to us in operating her own filtration systems. The best filtered water today is the water which has percolated slowly down through the earth into its hidden reservoirs. These reservoirs either discharge voluntarily through springs or are tapped by artesian wells. And, when we consider that this has been going on since the formation of this planet, we must agree that even re-filtration is no new thing.

But, inasmuch as we have not yet been able to reach enough of nature's own purified supply, we must resort to the use of her sewage, and this is the reason for filtration. Just what is being done may be realized by a glance at the picture showing a river water before filtration. It contains 1,189 bacteria to the cubic centimeter. Remember, please, that a cubic centimeter of water is approximately equal to one-half teaspoonful. Note the same water after filtration. It now contains only 15 bacteria. Those who stop to figure it out will see that this shows a removal of approximately 99 per cent. This is 2 per cent more than the universal requirement by Health Authorities. Their stipulation of 97 per cent removal is based on the fact that notwithstanding the large number of bugs, only a few are of a dangerous character. Consequently a removal of 97 per cent of the whole number means practically a total elimination of all of the dangerous ones.

Obviously, if we can remove the invisible organisms we can even more easily take out more tangible impurities, such as clay, iron, mud and plain dirt.

The method whereby this purification is accomplished is in imitation of Nature's own methods in that we build an artificial "Earth," in the shape of a bed of sand, and through this we strain the water.

It should always be borne in mind that filtration is essentially a straining process. Every filter is nothing less than a strainer. And this applies to a piece of old rag tied over the mouth of a faucet, or to the most elaborate filtration plant. Like many other devices, as, for instance, submarine boats and flying machines, filters are only man's imitation of nature.

Notwithstanding the ancient purification of water, filters as we now understand the term are of quite modern origin. To-day there are two distinct classes of large filtration plants. One is the "slow" or natural filtration, sometimes called the "English system," owing to its origin. The other is the "rapid" or mechanical filtration, sometimes called the "American system." Both use a bed of sand as the filtering medium. Mechanical filters have now quite generally superseded the older system, and for practical and economic reasons. The essence of the old method was a large area through which the water was allowed to

percolate very slowly, without the use of any chemical coagulant. This process was so slow that it required an area forty to sixty times larger than now required for mechanical filters. By the old way, to filter a million gallons per day was required an area of one-half acre (21,780 square feet). By mechanical filtration only 350 square feet are required.

In both classes of plant, the water, percolating slowly down through the bed of sand, leaves the bulk of its foreign contents on or near the top surface of the bed. When the bed has become so clogged with the foreign matter that the rate of flow is diminished and the rated capacity of the filter is not realized, it becomes necessary to remove the obstruction—that is, clean the filter. In the old-style "slow sand" filters, this is done by scraping off a portion of the top-most layer of the sand bed, and with it the accumulated sludge, or, as the Germans say, "schmutzdecke." This is still usually done by some such primitive means as "the man with the hoe." This sand is subsequently washed and put back, and used over again and again. This class of plant, owing to the great area and the large number of employees required, is now rarely built in this country, except by cities where interested parties have land to sell or where favorite contractors are to be provided for; or when the political patronage involved in the employment of so much labor is a factor.

"Mechanical" filters are properly so designated because of the mechanical appliances used in connection with them. The actual filtration is the same as in the type of plant just described—a percolation of the water downward through a bed of sand; but, instead of the slow and laborious operation of scraping the bed, the accumulated muck is washed off by reversing the flow of water, the incoming water being passed upward through the bed, thus washing into the sewer the dirt and impurities removed from the water by the filtration process.

This "American" or "mechanical" system of filtration is now in world-wide use, and it has become necessary to add mechanical filters to some of the "slow" filtration plants; a notable case in this country being that of the Philadelphia municipal filtration plant. Here, as elsewhere, the mechanical filters do the rough work; that is, take out the bulk of the foreign matter before it passes into the slow sand beds; hence the term "roughing filters" applied to such installations. This has been done also in England, a case in point being the plant at York, England. The mechanical filters are at a slightly lower elevation than the sedimentation basin, so that the water flows by gravity from the basin down through the mechanical filters, and thence out on to the slow filters, which latter are at a still lower level.

We have yet to consider the reason why "rapid" or mechanical filtration is so effective as its forerunner, "slow," or natural, filtration; for that it is as effective is no longer a matter of dispute. It is because of an essential part of the process of mechanical filtration—the chemically induced coagulation, which stimulates the natural coagulation taking place in the slow method.

It has been said that a filter is a strainer. Naturally, the more dense the filtering medium, the finer the strainer, and therefore the more perfect the filtration. Obviously, particles smaller than the interstices between the grains of the filtering bed would pass

through were they not retarded, and this is the effect of the accumulation on the bed of the foreign matter moved from the water, which forms a "sludge" of greater density than the bed itself.

In "slow" filtration this natural coagulation is depended upon to accomplish what in "mechanical" filtration is hastened and accentuated by the use of a chemical, in the addition of a reagent, usually alum, to the raw water before it enters the filter. The alum reacts upon the carbonates of lime naturally in or added to the raw water, and forms hydrates of alumina, which is of a consistency similar to gelatine.

The coagulum thus formed is of a sticky nature and insoluble, and, being of greater specific gravity than the impurities contained in the water, gradually precipitates or subsides throughout the water, enveloping and dragging down such suspended matter and color as it comes into contact with, and finally rests upon the filter bed. The coagulum, with its entangled suspended matter resting upon the filter bed, offers to the flowing treated water a closer and more compact surface than would be offered by the sand grains of which the filter bed is composed.

The hydrate of alumina, being of a sticky nature, adheres to the surface of the filter bed, thus forming a film or coating thereon, and catching the finely divided clay particles and other ingredients which go to make up "color," and which would otherwise slip through the bed. By the same medium the disease germs usually present in surface waters also are caught.

The foregoing applies to the coagulation of suspended matter. To remove the iron which is found in many artesian waters in a state of solution it is usually necessary to first precipitate the iron and change it into something tangible so that it may be caught in the "strainer" (the filter bed). This is accomplished by either the addition of milk of lime to saturate the gas which holds the iron in solution and thus precipitate the iron, or by oxidizing the iron by means of aeration, either of these methods changing it into tangible form, after which it is readily removed by the filter. If the iron is not removed from the raw water, when the water is subsequently heated the heat will release the gas holding the iron in solution. It is necessary, therefore, to remove the iron from the raw water if the water is to be heated.

In view of the popular prejudice against alum created by the advertisements of a baking powder which happens to not contain alum, it is well to keep in mind the fact that it is a chemical impossibility for there to be any free alum in the filtered water if the filter is properly operated. So long as there is sufficient alkalinity to the raw water all the alum added to it will be decomposed and remain in the filter in the form of hydrate of alumina, and will be washed in to the sewer when the filter is cleaned; and when the water to be filtered is deficient in alkalinity there is usually furnished a device for increasing the alkalinity by the addition of lime or soda before the alum reaches it.

Mechanical filters are sub-divided into two distinct types—"gravity" and "pressure." A "gravity" filter is an open tank, and through it the water passes by gravity, usually after preliminary sedimentation in tanks or basin adjacent to the filter, to a clear water well or basin, generally located beneath the filter.

Originally, plants of this type were of wood-tank construction. The rakes projecting down into the filter bed are used only when washing the filter. Sometimes the tanks are of steel, as is the plant at Alexandria, Egypt. In this plant, and this is the practice in a majority of the large plants, the bulk of the coagulation takes place in the sedimentation basins. From here it passes through the filters, which are contained in the building, into the clear water basins. The filter plant proper consists of 18 steel-tank low-type Jewell gravity filters, each 17in. in diameter. The total capacity of the plant is 10,000,00 gallons per day.

The increasing use of concrete in all construction work has made itself felt in the building of filtration plants, but the general arrangement and system remain the same.

One of the largest, and the one which has been taken as a model plant of this type, is at Little Falls, N.J., a plant of a rated capacity of 32,000,000 gallons, and which has been operated at the rate of 50,000,00 gallons per day. This is the plant of the East Jersey Water Co., which supplies a portion of the cities of Paterson, Passaic, Montclair and the adjacent territory. This plant is of the Continental type. It consists of 32 rectangular shaped units each 15 ft. by 24 ft., and having a surface area of 360 square feet. It is, of course, obvious that the rectangular unit economizes space.

In practically all complete gravity filtration plants the method of treatment and handling of the water is substantially the same. The inflowing unfiltered water, having received a predetermined quantity of sulphate of alumina solution, which may be fed by gravity into the suction of the supply pump or into the inlet to the sedimentation basin, or which may be injected into the supply main, is distributed equally into the sedimentation tanks. The coagulated water, after entering and circulating through the settling tanks, gradually rises to the top of the overflow dams, which are placed near the top of the tanks, leaving behind it a portion of the coagulated foreign substances. This mass of sludge settles to the bottom of the tanks, while the water flows from the sedimentation tanks into the filters, which are at a slightly lower level than the sedimentation tanks.

The depth of the filtering material is usually from 3 feet to 4 feet. The filter bed rests upon a screen system consisting of headers, lateral pipe sand strainers, all embedded in concrete in the base of the filter tanks. The water on reaching the filters percolates down through the beds and out through the strainer system, leaving within the filter the balance of the foreign matter.

Underneath the filters is a clear water basin, and into this the filtered water flows; and from this it is pumped to the point where it is used.

In plants of the gravity type, such as we have been considering, double pumping is generally required. This led to the development of pressure filters. In a pressure filter the principle of filtration is precisely the same as in a gravity filter. The advantage lies in the fact that being a closed tank it can be installed on any pressure line without double pumping equipment being required.

The operation of a mechanical filter is a comparatively simple thing. Given a good filter and of adequate capacity the chief requirement is to keep it at its initial efficiency. This can be done only by keeping

it clean. And the only way to keep it clean is by frequent and sufficient washing of the filtering material.

The frequency with which settling tanks and filters require washing varies as to the water applied. Filters are usually washed every day; the length of time varying from 10 to 20 minutes, according to conditions.

All mechanical filters are washed by reversing the current of water in the direction opposite to which it flows when filtered. Obviously, it is an advantage to have a sufficient storage capacity for filtered water to be able to wash the filters with filtered water, and this should be taken into consideration when planning a clear water basin or storage tank.

It is in the methods and devices used in washing the filters that the greatest differences obtain.

In the best types of mechanical filters the reversed flow is assisted by some method or device making for a more thorough, rapid, and economical wash, than would be obtained by merely depending upon the reversed flow of inflowing water, be it either filtered or unfiltered.

In the majority of rectangular concrete filters, and also in circular wood tank gravity filters of the Continental type, the reversed flow of water is assisted by what is known as the "air wash"; a stated quantity of air being blown upward through the bed as a part of the washing process. The amount of air required is at the rate of $3\frac{1}{2}$ to 4 cubic feet of free air per 1 square foot of surface area of filter bed per minute, against a pressure of $3\frac{1}{2}$ to 5 pounds.

Neither the air wash nor the revolving rakes were used in the first mechanical filters.

In the early models of mechanical filters there was a screen of wire gauze or perforated metal covering the bottom of the filter, and on which rested the bed. In washing the filter the current of water was simply reversed, passing it through an opening in the bottom of the filter, through the screen and up through the bed, washing off some of the impurities.

Coincident with the screen came the idea of breaking up the bed by forcing it through valves or screens and discharging it into the upper portion of the filter cylinder. This was the Hyatt "discharge filter."

The next development was the substitution of a plate for the screen, and in the plate a number of openings with strainers inserted therein, the idea being to concentrate the reversed flow, thus obtaining by means of greater velocity a greater agitation of the bed. The next advance was a more even distribution of the reversed flow by means of a series of pipes in place of the "screen plate" covering the bottom of the filter and conveying the water equally underneath all parts of the bed, and this is the method now generally employed.

It is a principle of filtration that in order to effectively and economically wash a filter the reverse flow of water must be introduced into the bed at the rate of at least 8 gallons of water per one square foot of surface area of filter bed per minute. To accomplish this result, municipal and other large filtration plants are divided into a number of units and are sometimes washed with a practically unlimited supply of water flowing back from the standpipe or reservoir. In plants where there is neither standpipe or reservoir, a special pump of large capacity is provided for washing the filter.

In small filtration plants, such as installed for hotels, office buildings, swimming pools, etc., it is usually not considered economical to provide a special pump for washing the filter, and many of these buildings have not sufficient, if any, storage capacity to permit the filter to be washed with the desired amount of water from a tank; and it was to meet these conditions that the "sectional wash" filter was designed by John Hyatt nearly 40 years ago. The New York "Sectional-Wash" filter is simply the old Hyatt filter improved in other particulars.

The principles hereinbefore set forth are not the opinion of any one manufacturer, but are facts just as strongly established as the fact that a tank of certain dimensions is of a certain capacity. It is a recognition of this fact that prompts many filter manufacturers to advocate plants of more than one unit where, so far as the capacity required is concerned, only one unit is necessary.

The feeding of the chemicals used in mechanical filtration is not a difficult matter with the improved devices developed in the past few years.

It is now possible to feed an accurate and uniform pre-determined dose. The dose is determined by local conditions and the device adjusted to feed accordingly. This may be changed by the filter operator at will. In wood-tank gravity plants the chemical, usually sulphate of alumina, is made up into a solution and fed by gravity into the suction line of the supply pump or at the inlet of the sedimentation basin. However, it may be fed by a special coagulant pump. For sulphate of alumina and soda the solution tanks are usually of wood, as in this plant at Alexandria.

In plants of concrete construction the solution tanks also are generally, and quite naturally, of concrete.

In plants where the water is not delivered constantly and at an even rate, it is possible by the employment of a special device to feed the chemicals automatically in proportion to the variations in flow. This is done by means of the Sutro Weir. In the Rutgers Place Public Bath, New York City, they feed three chemicals—soda-ash, sulphate of alumina and hypochlorite of lime, in the order named, all in proportion to the flow of water through the filters.

Ordinarily, however, chemicals are fed at a fixed rate, the solution flowing from the tank in which it was mixed down into an enameled cast-iron tank such as shown here. This is controlled by a float valve and contains a bronze regulating valve with hard rubber orifice. It will doubtless occur to you that these float tanks, or orifice tanks as they are termed, could be of concrete; and this is true, and sometimes the case as at Montreal. For small pressure filters, and some of the larger ones also, the coagulant is usually fed under pressure by an automatic proportional flow device such as shown here attached to the inlet of a New York Sectional Wash Vertical Pressure Filter. In this device is used potash or ammonium alum in crystal form.

Now we come to re-filtration. Re-filtration is only the natural development of mechanical filtration. The nation-wide movement for the conservation of our water supplies and other natural resources has its reflection in the schemes for the conservation or re-use of the water supply of industrial establishments.

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As a general proposition water which has once served its purpose is unfit for subsequent use for the same purpose; but diminishing water supplies and high water rates have caused engineers to devise methods for using the water over and over again.

The greatest waste of water is in the paper making industry. Here water is used most lavishly, in the repeated washings of the products during the course of manufacture; and the old way was to let this water run to waste.

True, sedimentation for the settling out of the coarser and heavier foreign matter so that the water could be used for some other purpose has been used to some extent; but it is only recently that re-filtration has been indicated as the real solution of the problem.

Now, however, there is an awakening to the fact that a great saving in the cost of water may be effected by re-filtration. Plants where filters have always been used are putting in circulating pumps and making their filters work all the time, instead of allowing them to remain idle except when supply tanks are being filled, as of old. And many of the new filtration plants are designed for re-filtration. A case in point is the 4-million gallon plant of the Tidewater Paper Mills, in the Bush Terminal, Brooklyn, N.Y. Here there is provision not only for the initial filtration of the supply as it is pumped from the wells, but also for the subsequent, and constant, if need be, re-filtration of the original supply.

This is the latest improved type of concrete gravity filter plant. Each of the four units has an area of 434 square feet, and a daily capacity of one million gallons.

FEWER FOREST FIRES IN UNITED STATES.

The damage done by forest fires on the national forests of the United States in 1915 was much less than the average for the past five years, according to official figures just compiled. This is in spite of the fact that the season was an unusually dry and hazardous one.

Of the total of 6329 fires only 346 did damage to the amount of \$100 or more. The average damage done by each fire was kept down to \$60.41, which was less than the average for the past five years. The average cost of fighting each fire was lowered almost \$21 below the average for the past five years.

Fire on the national forests in 1915 destroyed \$190,000 worth of mature timber. The damage to young growth, forage and stream flow cannot be calculated but was much greater.

Among the causes of these fires, lightning as usual holds first place, with 28 1-2 per cent. The carelessness of campers, responsible for more than 1100 forest fires, comes second. In California, however, fires caused by campers heads the list, with a percentage of almost 25 per cent of the fires in the State; lightning comes second with almost 20 per cent.

The railroads were responsible for only 9 per cent. Sawmills and logging operations caused less than 3 per cent., and the causes of 15 per cent are unknown. Nearly 11 per cent of the total were of incendiary origin.

Movement to Standardize Fine Papers

Special to Pulp and Paper Magazine.

New York, N.Y., April 25, 1916.

There is now on hand, and most likely ready to become effective at any time within the immediate future, a movement by the writing manufacturers of this country, to standardize the weights and sizes of the various kinds of writing papers. The writing men have been studying the many trade evils in their business, for a number of years, and while it has always been considered that it would be necessary, sooner or later, to adopt some standards as to sizes and weights the matter has never before been so thoroughly approved as it is at the present time. More than that, a more propitious moment for enforcing such standards has never before presented itself. The plans were discussed in detail at a meeting of the Writing Manufacturers' Association, which was held recently at the Hotel Traymore, Atlantic City, N.J.

According to the facts which have been received, the plan, which is now in the care of a committee for final decision, will be rather broad in its scope and will be of great value to both manufacturer and jobber. It is proposed to follow the English methods to a large extent. In other words, the English sizes and weights may be adopted and proclaimed standard. As the English sizes are practically universal, this will give our manufacturers an equal footing with those of other countries and will enable them to seek the trade of the world, in writing papers. Up to the present time, the export trade of the United States in this particular commodity has been somewhat negligible, owing to the fact that our sizes have been different from those used in other parts of the globe. The adoption of the recognized foreign standards would eliminate any such detriment.

However, while the acquisition of a large foreign trade would undoubtedly be looked upon with very much favor by all concerned, there are other matters in which this standardization scheme will be of greater importance to the manufacturer. In recent years, competition has become so keen, that the mill owners were not averse to meeting any requirement just so long as they were able to get business. The fact is that there have been many dull periods during which the paper-makers were compelled to make various concessions in order to keep their machines operating continuously. The result has been that each mill is today making an unlimited number of grades of papers. Whenever a consumer or jobber was troubled with some sort of a whim or fancy, he decided that a certain kind of paper would suit his purpose best and, in order to be able to get that business, the mill found it necessary to agree to meet the specifications which were mentioned in the orders up to a short time ago, the mills have been running on one grade for one ton, a few tons on another grade, and so on. It is recognized that the changing of the furnish in the paper is a matter which is attended with considerable difficulty and expense. That is, the furnish cannot be beaten to meet the specifications, the first time the machine is started to run. As the paper makers explain it, it is a matter of "feel" and it is inevitable that there should be considerable loss, because of the attempts made before the paper is such

as was ordered. It has been reckoned that this waste is not to be disregarded and that it is an important factor in the losses on operation. And, what is more, it is impossible to always give a perfectly uniform sheet. For example, it would be difficult for a manufacturer to give his customer the same sheet, in even detail, as that which he had given him on some special order, a few months before. Then, again, it not frequently happens that a mill is unable to dispose of a lot, which has some special description and is compelled to sell it at a considerable loss.

Under the new scheme, however, it has been calculated that not only would the manufacturer be able to eliminate these unnecessary losses, but he would be able to give the jobber and the consumer much better service. It can readily be seen that if there are certain standards, a mill might run on a certain furnish for some time and thus be able to guarantee absolute uniformity in the finish, the body and in other details of the paper. Aside from this the jobber would not be troubled with the unlimited number of different kinds of writing paper. The consumer might feel slighted at first. It is only natural that he should, for he has thus far been able to dictate his own terms, in many respects. However, with all of the mills working along certain lines, it would be a matter of but a short time before the consumer would not only become satisfied, but would most like reap the advantage of securing a better paper. It is hoped to arrange a standardization which will include about six classes: two higher grades, two medium grades, and two lower grades. Some of the concerns may label these classes, A, B, C, and so on, so that when a customer orders grade B from a certain manufacturer, he knows just what he is getting and knows that the mill will always have a fairly large stock on hand. This, by the way, is another important feature for both the jobber and consumer. If the mills will run only on stock lines, then it will be possible for them to keep their warehouses fairly filled and to make prompt shipments at all times.

The question of standardizing color is also being considered. Whether this can be accomplished or not, is problematical, but it would most assuredly be of great benefit to the mills. It is well known just what troubles attend a change in color. The machine must be washed for a task which often delays operation a few hours and other petty difficulties arise. Then, again, there are probably more losses on colored papers, than on any other kind. For, if the customers whose whim the mill is satisfying by using a certain odd color, refuses to take the stock, or finds that he has no use for it, then that lot of paper is almost a total loss.

Another matter of considerable interest, which is now under consideration, is the questions of watermarks. It is proposed to reduce the number of private watermarks. Up to the present time, watermarks have been used indiscriminately. Every jobber wanted a special watermark of his own for no real obvious reason. So long as the mills were willing to have new dandy rolls made, the jobbers were free in their demands for watermarked paper. Now, however, it is believed to be a good time to reduce the number of these papers and to concentrate on mill brands. This would allow the manufacturer to advertise his own watermarks more extensively and to derive some direct benefit. No fault is found with the large consumer to whom it is essential that his paper have a certain distinguished

character, but objection is taken to the use of water-marks for apparently no real purpose.

The trade at large is unusually interested in what the writing men intend to do about this proposition, for it may finally affect other branches of the industry. If the writing men can successfully standardize in their business, it may encourage others to do the same, and for that reason, the movement is of more ordinary interest. Just now, the committee of the writing manufacturers is conferring with a similar committee from the jobbers, so that an understanding will be satisfactory to all.

Within a few weeks, it is hoped to have the matter settled, and possibly to have issued the new list of sizes and weights.

Facts from the Report of the Workmen's Compensation Board

(Specially Written for Pulp and Paper Magazine.)

Accidents reported, 17,033.

Assessments collected from employers, \$1,539,492.

Distributed to employes and their families, \$1,186,221.

Surplus, \$395,026.

Number of cases to receive compensation, 9,829.

Widows benefitting, 65; children, 116; mothers, 35; fathers, 10.

Cost of administration for 1915, \$100,846.

Cheques to the number of 150, on an average, go from the Board's offices daily, amounting to about \$3,600.

Reduction in assessments for 1916 assured: "Though in view of the unavoidable incompleteness of the actual figures," says the Board's report, "the first year's experience cannot be regarded as conclusive, it indicates that the financial burden of the new law will be less than was anticipated. The assessments levied for 1915 are in most cases more than sufficient to meet the requirements. Though in a very few instances the bad accident record has called for an increase in rate, the Board has felt warranted in making substantial reductions in most classes of industry. In a number of classes or parts of classes, where the experience was good and the surplus large, reductions are being applied retroactively for 1915."

"The Act has worked smoothly and satisfactorily. The benefits of a new system of law to both workmen and employers are recognized and appreciated. Claims are expeditiously and inexpensively disposed of. Employers are immune from the expense and annoyance of litigation. The intricacies and hardships upon workmen and their families of the old doctrines of negligence and assumed risk are eliminated. The facts to be determined by the Board are usually few and simple. There is no longer the need for payment of legal fees either by workmen or employers."

Evidence that employers as a whole have been satisfied with the working of the Act in its first twelve months is shown by the fact that many employers have asked that industries or operations carried on by them which are not now under the main schedule of the Act should be included. Although the Act introduced a rather radical alteration in compensation methods, the co-operation shown by all parties in the first year's experience has been excellent and steadily improves.

The discrepancy between the number of accidents reported, 17,033 and the number compensated by the Board, 9,829, is explained by the rule that accidents involving a disability of less than seven days have no claim. York County showed the greatest number of accidents in 1915, with 1868, and the District of Patricia showed a zero mark.

Fifteen safety associations were brought into existence, the salaries and expenses of the inspectors being paid in most instances by the Board. The educative and preventative work carried on by these inspectors, devoting themselves as they do to one group of industries, is of the most valuable order.

The need for such supplementary work is proved by the records of accidents in Ontario industries. Twenty-one set screws which the Board says might have been countersunk for about \$7.35 were responsible for an accident burden of \$5,619.39. Open shafting and conveyors which might have been covered for a few dollars wounded 66, killed 4, and crippled 37 wage earners. Because two elevators lacked automatic locks, two lives were sacrificed and a compensation burden imposed of \$6,179.06. Here is a fruitful field for the safety inspector.

The abolition of litigation is one of the most satisfactory benefits of the Workmen's Compensation Act to both employer and employee. More than 17,000 claims were disposed of without recourse to courts, or any friction between master and man.

The manner of dealing with claims is very simple and informal. Notice of the accident is required to be sent in by the employer within three days after it occurs. The workman makes a similar report, which is supplemented by the attending physician. Promptly upon the receipt of the latter evidence, a cheque is mailed, seldom with more delay than two or three days, unless a special investigation is necessary; in that case temporary payments may be remitted to the injured party.

Of the 9,829 accidents compensated for, 8,544 caused temporary disability only, 1,033 resulted in some measure of permanent incapacity, and 251 terminated fatally.

The average wage of all injured was \$13.27 per week, and the average age 33 for all. The oldest worker injured was 81, and the youngest 11.

The most far-reaching effects of the Act have been in cases of accident resulting in death, or in permanent disability "of over ten per cent." The widow of a workman killed in his employment is entitled during life or widowhood to a payment of \$20 a month, and \$5 a month for each child under sixteen years of age, but not exceeding \$40 in all. A surviving invalid husband receives the same compensation as a widow. If the workman leaves children only, the payment is \$10 a month for each child under sixteen years, but not exceeding \$40 in all. Dependent fathers and mothers are provided for on a similar basis. All pension allowances are governed by the provision that in no case is the compensation to exceed 55 per cent of the workman's earnings in his employment. Where a widow remarries the periodical payments cease, and she is entitled to a lump sum within two months of her marriage equal to two years' payments.

In the operation of the Act, great care is taken to guard against all forms of imposition. The ambitious workman, eager to return to his employment and overcome his handicap through injury, is not placed at a disadvantage as compared with a comrade who

makes no such effort. Individual circumstances may, and often do, vary the amounts set forth in the table of allowances. This power to discriminate has been especially needful in the rating of "permanent disabilities," for which a workman is entitled to 55 per cent life pension, based on the extent of his impairment.

TO MANUFACTURE WOOD ALCOHOL FROM WASTE PAPER MILL LIQUOR.

One of the paper mills at Appleton, Wis., is installing for the manufacture of wood alcohol from the digester liquor a plant which will have a capacity of 500 gallons daily. The total liquor waste from this mill amounts to 250,000 gallons daily, from which about 3,000 gallons of wood alcohol could be produced and the plant, if it prove the success claimed for it by the chemical engineer who is putting it in, will be enlarged to that capacity.

The inventor of this process is Charles Marchand, a French chemist, who was formerly manufacturer of the peroxyde of hydrogen largely sold in the United States under the trade name of hydrozone. For many years this was the purest form of peroxide to be obtained upon the American market and it was on sale at almost every drug store. Mr. Marchand has, however, for some time been in this country giving his attention to wood chemistry and has been doing experimental work upon the Pacific coast. The basic patent upon this process was granted to him last September.

The present cost of manufacturing wood alcohol is about 27 cents, but it is stated that it can be recovered from waste liquor by this process at a cost of about 14 cents a gallon.

If this process work out successfully in practice, according to the claims made for it, it will prove a somewhat severe competitor of the wood-distilling process by which wood-alcohol has heretofore been manufactured.

BOOK REVIEW.

"The Lumber Industry," issued by the Ronald Press Company, of 20 Vessey Street, New York, has just been received by the Pulp and Paper Magazine. The book is not a technical nor scientific compilation of facts relating to the forests of the Continent, but rather a practical book which the ordinary lumbermen will find useful in his business.

The functions of the forest are clearly told. The lumber production of the United States with the kinds of lumber cut, is fully covered, while such questions as forest ownership and the practical operation of lumbering, and conservation, are all dealt with in a capable manner. The price of the book is \$1, post paid.

PAPER AND SHOES.

Compressed paper with a thin leather covering is being used in Germany as a substitute for leather shoe soles owing to the scarcity of leather caused by the war.

NEW BOND PAPERS.

Lawson & Jones, Limited of London, Ont., announce that they have registered under their name two water-marks for writing papers as follows:—Pioneer Bond and Oriental Bond.

AMERICAN NEWSPAPER PUBLISHERS ELECT OFFICERS.

The American Newspaper Publishers' Association at the close of its annual meeting elected the following officers:

President, Hopewell L. Rogers, Chicago Daily News; vice-president, Franklin P. Glass, Birmingham (Ala.) Daily News; secretary, John Stewart Bryan, Richmond (Va.), News Leader (re-elected); treasurer, Edward Payson Call, New York Journal of Commerce (re-elected); J. F. Mackay, Toronto Globe, was elected a director.

6,500 EMPLOYEES GET INCREASE.

The International Paper Company, operating mills in New York, Massachusetts, Vermont, New Hampshire and Maine, has granted a wage increase of approximately 10 per cent to its employees, effective May 1st, it was made known at the company's headquarters. The company operates 22 mills, employing about 6,500 workrs.

PAPER ROPE OF CREPE PAPER.

The weaving of crepe paper rope is the latest of domestic art—and one of the new sensations in Oakland, Cal. By the use of the cleverly-twisted paper experts are able to make baskets, waste paper holders, and other articles, much after the fashion of the raffia work that a short time ago was one of the big successes in America.

Until the present war started, most of the weaving was done with reed and raffia. A greater part of these two products was imported from Germany, and when the supply was cut off, it was necessary to find a substitute. This substitute appeared in form of rope made from crepe paper, and it captivated the reed and raffia enthusiasts from the start.—The Paper Dealer.

PAPER OUTFITS PROTECT.

Paper suits which are said to be equal, if not superior to cloth or fur garments in keeping out the cold are now being manufactured to be worn beneath outer garments by airmen.

Flyers frequently experience great difficulty in keeping warm when ascending to high altitudes, and paper, being a good non-conductor, furnishes excellent protection from the cold.

The outfit worn is of very thin, tough paper, which can be washed and dried, and consists of a coat, trousers, loose-fitting socks, and a cap with earlaps.

SPRING CLEAN-UP NECESSARY.

Canadian conditions make a clean-up in spring a necessity. Owing to the cold weather, and the abundance of snow, sanitary conditions are not at their best. Lanes and alley-ways become littered with garbage, ashes and waste-paper; backyards, cellars and attics harbor refuse which is both useless and dangerous. With the melting of the snow this accumulation is exposed to view, the thawing of garbage permits of speedy decay, and a very dangerous condition is at once established.—Conservation (Canada).

UNITED STATES NOTES

The Arrowhead Mills, Inc., has been chartered at Fulton, N.Y., to operate the old Battle Island Paper Company's sulphite plant there. The capital of the newly formed corporation is \$250,000. Those interested are F. A. Emerick, Stanley P. Emerick, R. A. Downer, J. H. Howe, treasurer, and B. W. Bennett, secretary. The Battle Island Paper Company was declared bankrupt more than two years ago, and since that time has been idle. Last November the plant was sold at auction at the court house in Oswego, and was bid in by the bondholders of the defunct concern for about \$27,000. About three months ago the plant was purchased from the bondholders by the men whose names have been mentioned, and they expect to have the plant in operation in the near future.

* * *

Reports from Washington, D.C., state that many complaints are received from newspapers in the Middle West about the high prices demanded for paper. The complaints are that not only are prices constantly rising, but it is impossible to obtain contracts for future deliveries. Manufacturers say that the situation is due to a shortage of certain chemicals, importation of which has been shut off by the European war. The Federal Trade Commission tells me there is no foundation for the story that there is a shortage of chemicals, Mr. Dyer is quoted as saying, "Under the circumstances it would be well to find out if there is a violation of the anti-trust laws."

* * *

Plans are nearing completion for the annual convention of the National Conservation Congress, to be held at the Willard Hotel, Washington, D.C., May 2-4. There will be a number of committees, among them the Forestry School, Yale University, will be chairman. Other members of the committee recently appointed include: Raphael Zon, secretary of the Forest Service; Major George P. Ahern, U.S.A., former Chief Forester of the Philippine Islands; Robert E. Faulkner, H. Oldenburg, of the Minnesota Board of Forestry; Prof. David T. Mason, of the University of California; J. S. Holmes, State Forester of North Carolina; Percival S. Ridsdale, secretary of the American Forestry Association, and R. D. Goodman. In connection with the congress the National Association of Conservation Commissioners, of which Dr. G. W. Field, of Boston, Mass., is president, will also hold their meeting.

* * *

The Hawthorne Paper Company of Kalamazoo, Mich., has increased its capital from \$400,000 to \$500,000. The additional capital will be used to pay for the many improvements that are now being made at the mill. Another new machine will also be added, and other necessary equipment installed.

* * *

The Grand Lake Company of 30 Broad Street, New York, has discontinued the manufacture of toilet paper. The machinery is to be sold in order to make it possible to give more attention to the production of bags.

* * *

The Eaton, Dikeman Company, of Lee, Mass., manufacturers of blotting, will build a rag stock shed 160

feet by 84 feet, north of the mill building. The contract has been awarded to Frank R. Harding. The company has already three large stockhouses filled with rags and a large quantity of bales are piled with rags, and a large quantity of bales are piled out of doors, and according to reports, another shipment only awaits the erection of the new shed.

* * *

The Paper manufacturing firm of Humphrey & Young, of Napanock, N.Y., was incorporated with a capital of \$5,000. The incorporators are: Chester Young, Dillon, B. Humphrey and Margaret Humphrey.

* * *

The Arlington Company, which recently took over the Norwich Paper Mill, of Norwich, Conn., expects to start making celluloid tissues this month. Some of the machinery that was in the mill has been removed, as it was of no use in making pyralin, the special name of the product of the company.

* * *

The newly organized Chemical Co. has begun construction work on a plant at South Brewer, Me., for the manufacture of electrolytic bleach, to be used by the Eastern Manufacturing Co. The plant will be located on the bank of the Penobscot river, adjacent to the paper mill of the Eastern Manufacturing Co. The cost of the plant will be approximately \$150,000. The building will be 240 feet long and 80 feet wide.

* * *

The Consolidated Water Power and Paper Company of Grand Rapids, Mich., awarded a contract for 10,000 barrels of cement to be used for construction work on the power dam at the paper mill in Grand Rapids, and at the company's mill at Biron. Two concrete piers will be built at the Grand Rapids dam to replace the present wood structures, and steel gates will be installed instead of the present wood ones.

* * *

The Bogota Paper and Board Company of Bogota, N.J., formerly the American Paper Company, is operating its No. 1 Mill, having sold its No. 2 Mill to the Federal Paper Board Company. No. 1 Mill has a 104-inch board machine, with a capacity of 35 to 40 tons of board per day. Extensive improvements are under way at the mill to increase the production and to improve the quality of the Bogota's product.

* * *

The Universal Paper Products Company, of Chicago, has purchased the Elmore automobile plant at Clyde, O., and it is expected that operations will be under way about May 1. About 500 men will be employed. The buildings are now being made ready for the new occupant.

* * *

The American Fibre Company has purchased a plant at East Berlin, Conn., and will convert mill sweepings into suitable stock for fine paper mills. The officers of the concern are J. R. Gillbett, president; Henry M. Steinholtz, vice-president and secretary, and Arthur L. Sampson, treasurer.

A NEW WOOD PRESERVER FOR WHICH MUCH IS CLAIMED

A new patent process for the preservation treatment of wood was described in a recent issue of the "Engineering Record." The wood was immersed in a liquid compound for which remarkable penetration is claimed, and which has the effect of coating the cell walls of the wood structure, waterproofing them and rendering them immune decay. The nature of the compound is not stated except that it has a paraffin base. The solution apparently also has an affinity for water, as it is claimed that green timber put through this immersion process becomes thoroughly seasoned without checking or warping.

Entended service tests of material treated by this process have not been made, but it has been in use for two years upon black gun timbers in railroad tracks of the Richmond Cedar Works in the Dismal Swamp, Virginia, and has also been tested in Norfolk, Va., for three years in the form of street paving blocks. The process was invented and patented by Col. R. A. Marr, formerly dean of the Virginia Polytechnic Institute, as a result of experiments that he has been carrying on for many years.

If the new process prove to be all that is claimed for it will be a somewhat formidable competitor of creosote in the preservation of wood, as it is capable of application in many places where creosote is objectionable. The process is said not to change materially the appearance of the wood, which may be used for flooring or interior finishing or other similar purposes after the treatment. A number of previously loudly heralded wood-treating processes have, however, subsided into oblivion, even after favorable review in an engineering journal; and the proper attitude toward this newly born prodigy, is one of watchful waiting.

THE BRITISH MATCH TAX.

Difficulties in connection with the imposition of the match tax have been overcome and the manufacturers have withdrawn their opposition to the measure. They have assured Reginald McKenna, Chancellor of the Exchequer, that they will do everything in their power to assist him in raising the revenue.

Under the new taxation plan proposed by the Chancellor of the Exchequer matches are taxed 4d. per thousand, which is estimated to produce revenue of £2,000,000 at normal exchange about \$10,000,000. When the tax became effective last week the match manufacturers of Great Britain and Ireland decided to suspend sale and deliveries. They claimed that the Government had taken a basis for fixing the match tax which made it impracticable to arrange prices, as the Government taxed matches by the thousand, whereas they were sold by the box.

THE WASTE OF TREES.

A man who is supposed to know comes forward with the information that Canada wastes every year an amount of paper which, if harvested and re-made, would save the cutting of about 100,000 trees. That sounds rather alarming, but the remedy is hard to find. For instance, a carload of waste paper shipped from Edmonton to the nearest paper mill in B. C. cost ten dollars more in freight than the shipment was worth. Nevertheless it does seem a pity about those trees.—Lloydminster Times.

PULP AND PAPER NOTES.

Wood consumed in the United States in manufacture of paper amounts annually to 4,500,000 cords.

The National Forest Reservation Commission approved the purchase, under the Weeks law, of 33,025 acres of timber lands in New Hampshire and Maine. The new purchases are valued at an average of \$5.12 per acre.

War conditions, the shortage of raw materials and the unusually heavy demand, both domestic and export, have affected the price of newsprint less than any other grade of paper, according to statements by U. S. trade interests. Ninety per cent of newsprint business is done on a contract basis and at least half of the contracts for 1916 were closed last December at prices which represented only a very small advance over 1915.

The St. Maurice Paper Company, Limited, Montreal, has been incorporated with capital of \$10,000,000. The applicants for the incorporation included Alexander Chase-Casgrain, K.C., E. M. McDougall and P. C. Casgrain, advocates, all of Montreal.

Forty million dollars worth of lumber is the estimate given by a professor of forestry who has been on a British purchasing commission for the Allies as the amount of the orders given or about to be given to the Dominion.

The "Log of the Lab" is the title of a new and very creditable specimen of amateur journalism coming from the Forest Products Laboratory at Madison, Wis., which is hereby formally recognized as a member of the Fourth Estate by the printing of its title in italics.

Over ten thousand five hundred square miles were added recently to the existing area of Dominion Forest Reserves, making a total of over thirty-five thousand eight hundred square miles of reserved forest land in the Western Provinces under Dominion jurisdiction.

MAKES BETTER MEN.

The young man who has lived very much indoors, who has had no experience of roughing it, and to whom danger is utterly unfamiliar, not unnaturally believes himself to be a timid person. If he had a few months' seasoning in military service he would come to know himself and respect himself as a better man than he ever knew he was.—Exchange.

FORESTRY INSTRUCTOR GOING OVERSEAS.

Lieut. C. R. McCort, an instructor in Forestry at the Forest Products Laboratories, McGill University, is going Overseas as an officer of the McGill Battery of Siege Artillery. He is a graduate of the Forestry Department of the University of Toronto, and also holds a lieutenant's certificate in infantry, and at the last School of Heavy Artillery at Quebec, took high rank in the final examinations. This also qualified him for a commission in field artillery.

PAPER ROPE INSTEAD OF JUTE.

Paper rope is being made in the United States, and has proved so successful that it is thought that this and the cellulose fibre will largely replace the yearly \$22,000,000 jute import from England.

Ottawa Notes

Ottawa, Ont., April 25.—Mr. George H. Millen, president and general manager of the E. B. Eddy firm of Hull, can now lay claim to being almost the Dean of Canadian pulp and paper manufacturers. A week ago Mr. Millen celebrated the completion of no less than half a century of service with the company with which he is still connected.

The occasion was suitably commemorated by the staff of the Eddy Company, whose esteem as well as obedience Mr. Millen has always been able to command. A handsomely decorated basket of flowers, containing fifty American Beauty roses, one for each year of the recipient's service with the firm, was presented to him while there was no employee but also wore a rose in his buttonhole to mark the event.

Mr. Millen was born in Glen Falls, New York, and after seeing service in the American Civil war came to Canada and arrived in Hull in 1866. There he met the late E. B. Eddy, and was placed by the latter in charge of a small sawmill which Mr. Eddy had rented. This mill, together with match and pail making machinery which Mr. Eddy owned, were practically the foundation of the huge plant of to-day. As the business grew Mr. Millen took charge of its mechanical end, and to him is due the credit for the perfectly appointed state of the Eddy mills to-day. In 1886 the concern was made a joint stock company, and Mr. Millen was made a director thereof. His next promotion came with Mr. E. B. Eddy's death, when he was made joint manager of the business with Mr. W. H. Rowley, and on the death of Mr. Rowley he was made both manager and president of the company.

The woods operations of pulp and paper firms in this district have been delayed over two weeks so far by the slowness of spring conditions. According to Mr. C. J. Booth, of the pulp and paper firm of that name, ice and snow are still thick on the rivers and lakes in the deep forest, and driving has been held up as a consequence. However, good conditions are promised for the summer, and on this account the cut of pulpwood in the Ottawa district this year is expected to be very heavy to fill the demands which are now being made on Canadian mills for pulp and paper. The Ottawa river is still rising steadily, and is over six feet higher now than its highest mark at this time last spring, as well as higher than any spring for the last eight years.

An order-in-council has been passed by the Government revising the schedule of rates in force for the use of the various Government works on the St. Maurice river, including booms, slides, etc. This is the first change made since 1898 in the rates in effect on this well known lumbering stream, and has been rendered necessary, according to the order-in-council, by the fact that many woods besides spruce, are now used in pulp manufacture and there are frequently arguments as to the number of pieces of small logs required to make a cord of wood. The old clause governing the rate for pulpwood was as follows: Spruce saw-logs, 13 feet long, 9 inches and under in diameter, cut into pulpwood, to be rated at 10 pieces to the cord." The new clause is: "All small saw-logs 9 inches and un-

der in diameter to be charged four-tenths of the rate per saw-log, provided in the revised tariff of tolls for the use of the St. Maurice slides and booms."

According to a statement made by Lt.-Col. De Salaberry, of this city, who is recruiting a battalion here chiefly among lumbermen and the employes of local pulp and paper firms, there would be many more woodsmen in the ranks of the Canadian armies were it not for the prevalence of flat feet. Most of the lumbermen he has met, says Col. De Salaberry, are constructed along the lines of Hercules. Owing to their habit of wearing moccasins, however, they suffer very largely from broken arches and fallen insteps, which furnishes a bar to their passing the medical examination. Col. De Salaberry endeavored to have the men passed, believing that the use of the army boot would remedy the defect complained of, but the medical officers refuse to certify them. This, however, has not prevented the J. R. Booth, E. B. Eddy and Bronson pulp and paper companies of this district from furnishing many good men to the ranks of the various battalions which have gone from here. The Ottawa Valley has also contributed a large quota to the Forestry Battalion, which is now mobilized at Quebec ready to go overseas.

The Department of Trade and Commerce is following up its recent appeal to Canadians to save their rags and waste paper, which is now being posted up in public places in Canada. The Department now requests paper mills and large dealers interested in the purchase of waste rags and paper to send in their names to the Department, so that it can put collectors of such waste in communication with them. Repeated inquiries have been made by newspaper and business houses to the Department as to where they can dispose of waste when saved.

The Department has also suggested that municipal authorities and boards of trade throughout Canada take the matter up, and organize for the collection and disposal of this waste.

Mac.

CORRECTIONS.

In our issue of March 1st, we reproduced an article from an English journal dealing with textile from wood pulp. Unfortunately a few typographical errors occurred, which we now correct.

The name of the firm is the Textile Engineering Company, the Managing Director of which is Mr. George Seaton Milde. The firm is now spinning paper at the rate of 5,700 spindle revolutions per minute and are able to produce goods 40 per cent cheaper than German manufacturers have been able to produce paper textiles. The firm also announces that they are making paper twine, the breaking strength of which is a little less than ordinary hemp twine, the appearance however being far superior.

In the review of the Canadian paper trade recently published in the Pulp and Paper Magazine, the following sentence appeared under the name of Edward Partington Pulp and Paper Company, "We have not done much in the way of repairs to our plant." This should read as follows: "We have not made any extensions, nor have we done much in the way of alterations to our plant during the past year."

PULP AND PAPER NEWS

Ernest Harecourt, of E. H. Harecourt, Limited, Toronto, has returned from a holiday trip to Atlantic City and other points south.

F. A. Ritchie of Ritchie and Ramsay, coated paper manufacturers, Toronto, and R. L. Patterson of Miller and Richard, type founders, Toronto, are expected home this week from a two months holiday trip through the West Indies and British and Gutch Guiana.

Mrs. Slater, wife of Joseph H. Slater, superintendent of the Espanola plant of the Spanish River Pulp and Paper Co., died in the hospital at Sault Ste. Marie, Ont., on April 21st from an attack of peritonitis.

The holders of the six per cent, first mortgage bonds of the Ocean Falls Co. of Ocean Falls, B.C., which company has been in liquidation, are being asked to deposit their bonds with A. B. Martin, Receiver, Vancouver, B.C. and they will be exchanged at the rate of \$250, six per cent bonds, 150 preferable shares and \$125 ordinary shares of Pacific Mills. Limited, for every 100 pounds Ocean Falls, Limited, six per cent, first mortgage bonds. It will be remembered that some time ago the Pacific Mills, Limited, took over the assets of the Ocean Falls Co. which industry is being reorganized. The former is capitalized at \$9,500,000, of which \$2,000,000 is six per cent, preferred shares and the remainder common shares, and there will be a bond issue of \$3,000,000. The pulp and saw mills are being overhauled and will soon be put in operation by Pacific Mills. Limited, while a new newsprint and kraft mill will be erected with an output of seventy tons daily of news and forty of kraft.

The footing for the walls of the new extension of the Interlake Tissue Mills at Merritton, Ont. are now completed by the contractor, W. J. Trimble, of Toronto, and work will proceed rapidly on the addition which will be 148 feet long, 72 wide and three storeys high.

The Rotary Club of Hamilton, who had charge of the recent collection of rags and old papers in that city, succeeded in raising over two thousand dollars for the Red Cross Society. Tons of paper were collected and prizes were offered the public school collecting the largest quantity and the competition was very keen and one school gathered nine tons of paper or over a hundred and fifty dollars worth. The children marched from the city hall to the collecting depot carrying bundles of paper and the procession was witnessed by thousands of citizens.

The employees of the Rudd Paper Box Company, Toronto, were recently granted a voluntary increase in wages of ten per cent. The company employs about one hundred and thirty hands and L. W. Manchec, President, was warmly thanked for his action.

During the absence of C. H. L. Jones, manager of the operating department of the Spanish River Pulp and Paper Co., who has assumed the command of the new 227 Battalion which is being recruited at Sault Ste. Marie for foreign service, his duties will be looked after by George H. Mead, president of the company.

John Martin of the John Martin Paper Co., Winnipeg and Edmonton, spent a few days in Toronto last week on his return from a holiday at French Lake, Indiana, and other points in the Middle West states. Mr. Martin who some time ago was active in the preliminary work of organizing a paper jobbers association, reports that he has by no means given up the proposition but it is not likely that anything further in this matter will be done until after the war.

The American Sales Book Co., who are succeeding the Carter-Crume Co. of Toronto, in their annual report, say that the dividends on the preferred stock may be resumed with the first quarter of next year and the rate may be five per cent. If the expected improvement in earnings occurs, the former rate of seven per cent on the preferred stock will be restored. In the meantime the seven per cent dividend is cumulative from January 1st, 1916. The profits of the company for the year were \$180,816, of which \$31,383 represent interest on outstanding bonds and \$50,000 reserved for depreciation, leaving a balance of \$102,753 to carry forward. Liabilities were reduced during the year by \$107,000 but no profits were disbursed.

Herbert C. Jarvis, general manager of the New Empire Wall Paper Co., Toronto, who is one of the foremost men in the business, recently observed his twenty-fifth anniversary in connection with the trade. He commenced with M. H. Birge and Sons, manufacturers, Buffalo, and was afterwards manager for the Wm. Campbell Wall Paper Co., New York. With United States capital, he organized the Empire Wall Paper Co. in 1902, and two years later bought out the Americans with Canadian capital. Last year Mr. Jarvis invented and secured patents on ready trimmed wall paper.

The Ontario Government, in order to secure the organization of the resources of Ontario for efficient co-operation with the federal authorities in the prosecution of the war and to maintain industrial and agricultural production has appointed a Provincial Commission of which Sir John Hendrie is Chairman and several members of the Ontario Legislature are members. A number of prominent business men in the province will be called in to act with the Commission.

L. F. Houpt, who has been sales agent for the Jonquière mill of Price Bros. and Co. in Toronto and Ontario, is not connected with the firm in that capacity now and all orders are being looked after from the head office in Quebec.

Thomas Gain, sales manager for the Don Valley Paper Co., Toronto, who has been ill for a couple of weeks, is able to around again.

It is understood that the three tour system, which has already been introduced in many book and writing mills of the other side of the line will be inaugurated in the near future in the plants of the Provincial Paper Mills Co. This will apply to machine men, beater men, calendar men and others who will work in the three shifts of eight hours each. The mills will be

operated ten or twelve hours longer each week which will somewhat increase production. In the finishing, cutting and shipping rooms the present hours will be observed but wages will be increased. It is expected that the three hour tour system will be started next month.

The annual meeting of the Canadian Press Association will be held in the new Technical School building, Toronto, on Thursday and Friday, June 1st and 2nd, to be followed by a lake trip to the Soo, Fort William Port, Arthur where the large mills of the Lake Superior Paper Co., will be visited and many members of the newspaper craft will thus be given their first lesson into the mysteries of pulp and paper making.

TRADE NOTES

Toronto City Council has awarded the contract for job printing and printing the voters list for the coming year to Charles Roddy, while the printing of the council minutes reports of committees, bylaws, etc., goes to Industrial and Technical Press. The job printing cost the city about twenty-three thousand dollars and the printing of the minutes \$13 695. Barber-Ellis, Limited, have been given the contract to supply the letter heads envelopes, etc., while the blank books loose sheets and miscellaneous supplies will be looked after by Brown Bros., Limited.

The will of the late Robert Davies of Toronto, President of the Don Valley Paper Co. has been filed for probate. The amount of the estate is \$1,578,304, but in this the possible value of Mr. Davies' interest in the Don Valley Brick Works, is not included on account of unsettled litigation. The value is roughly estimated at \$500,000. In the securities held by the deceased are 1,500 shares in the Don Valley Paper Co. valued at \$100,000.

Owing to recent floods of the Spanish and Vermilion rivers much damage has been done. The dam of the Spanish River Pulp and Paper Mills at the head of Onaping Lake was carried away with the entire winter's cut pulp logs but it is expected that mostly all of them will be received.

A. G. McIntyre of Toronto, General Manager of the Mattagami Pulp and Paper Co. is spending a few days at Smooth Rock Falls getting matters under way for the early commencement of construction on the new 75 ton sulphate mill.

IMPORTS OF PAPER AND PAPER-MAKING MATERIALS TO GREAT BRITAIN.

The imports of paper and paper making materials amount to over 1,792,000 net tons a year and occupy in ship's space about 2,240,000 net tons. It is not possible of course to stop this trade entirely, but the Government intend to take a considerable percentage off it. Paper is now used wastefully on account of its cheapness, but if its importation is seriously curtailed, it can hardly fail to become much dearer.

Wood-Pulp.

The amount of the wood-pulp imported in 1915 was 1,068,536 net tons as against 1,109,105 in 1914. Exports and other vegetable fibres used in paper-making amounted to 154,043 net tons as compared with 205,121 in the previous year. Deputations from the Newspaper and Magazine Proprietors' Association and the Board of Trade will appoint a commission to arrange what imports should be allowed, and also to devise some arrangements for equitable distribution of the pulp.

PRICE BROS. REPORT

Price Brothers & Company Limited annual report for the fifteen months ended February 29th, 1916, shows a surplus of \$393,538, equal to 7.87 per cent on the capital stock. On a pro rata basis, the earnings for the twelve months would amount to \$314,830 or \$81,000 over the figures of the previous year. Sir William Price, President of the Company, states that owing to the suspension of lumber operations, the company's earnings were seriously interfered with. There was a brisk demand for lumber from the other side, but it was impossible to secure boats.

The president notes that the operations of the Kenogami paper mill had been most satisfactory and contract renewals for its output are being made at increased prices. The ground wood pulp mill at Rimouski had been reopened and earned profit. The lumber business while showing profits, suffered from lack of shipping facilities.

Comparisons of profit and loss figures, as presented in the last three annual statements of the company, follow:

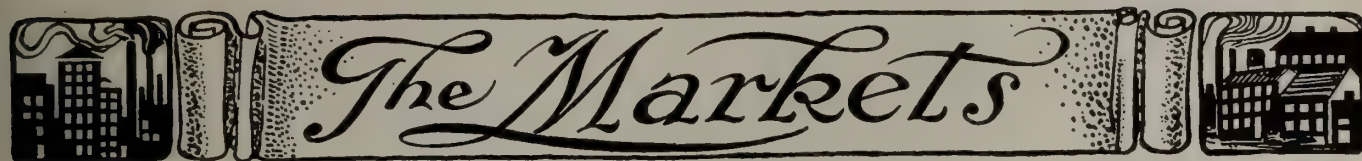
	1915.	1914.	1913.
Profits	\$1,032,185	\$692,830	\$512,527
Bank int.	119,172	98,819	61,240
Balance	\$913,013	\$504,010	\$451,287
Bond int.	362,803	290,230	277,499
Balance	\$550,210	\$303,779	\$173,788
Sink. fund	156,671	70,000	.....
Balance	\$393,538	\$233,779	\$173,788
Prev. bal.	1,010,031	1,026,251	852,463
Balance	\$1,403,569	\$1,260,032	\$1,026,251
Deprec. des. . . . .	.....	250,000	.....
Surplus	\$1,403,569	\$1,010,031	\$1,026,051

A BIG PULPWOOD ORDER.

The Pulp and Paper Magazine understands that Mr. J. McD. Grosart the well known woods manager for Price Brothers & Co., Ltd., has severed his connection with that firm to continue his activities in the lumbering and logging industry on his own account.

He has recently contracted for a term of years, the entire cut of some 75,000 cords of pulpwood per year for the Mattagami Pulp & Paper Company Ltd. in new Ontario.

Entering the employ of Price Brothers & Company in 1899 as a clerk at the St. Etienne Mills Mr. Grosart's ability was soon demonstrated and was fittingly recognised by the company in whose services he soon rose to be manager of several of their most important establishments. Not only did he show his efficiency as a mill operator but he demonstrated his technical ability in the construction of such mills as the Grand Bay Mills, St. Marguerite Bay establishment, St. Gédéon establishment, Desbiens Mills, etc. Since the completion of the large pulp and paper mills at Kenogami the logging department of those mills was also added to his duties as manager of some six or seven large lumber mills, thus embracing all the Lake St. John and Saguenay operations of the company under his supervision,



The Markets

CANADIAN MARKETS

The paper market still continues to show activity all along the line, and the situation so far as supplies of both finished and raw products is concerned does not improve. Many plants, although operating to the fullest possible capacity, are running steadily behind on their tonnage as, in the past, nearly all had reserve stocks to draw from, but these have been eaten up. In the current market as high as three and a half cents has been obtained for news print on the other side, and three cents is not an uncommon figure for those who have no contracts to be renewed. The three plants of the Spanish River Pulp and Paper Co. are producing four hundred and seventy tons per day, while the new mill of the Abitibi Power and Paper Co. has been yielding on an average two hundred and fifteen tons daily, and, on certain days, the output has been two hundred and thirty tons.

No matter how high news print soars that which is shipped across the border will not likely ascend beyond two and a half cents as if this figure is exceeded, the product becomes subject to duty.

Another problem, that paper mills are up against, is in the matter of wires, remarked a leading authority of the trade this week. Brass has taken the place of bronze wires, which are practically unobtainable. The life of the former is limited to only a few days, while the increase in cost is several hundred per cent. Coal and other supplies, including felts of all kinds, are costing much more.

The Provincial Paper Mills Co., Toronto, have sent out notices that, owing to having more orders than they can fill for some months, they have not only withdrawn quotations, but do not give any for general business. The firm state that they will be glad to discuss individual orders, as it will be their aim to take care of the business that they had last year at such time as the paper is actually needed, and for such amounts as ordered last year. The firm add: "Until further notice any quotations that we may make must not be considered as applying to various orders, which you may wish to send us, but only to such individual orders as we may discuss with you at the time we give quotation. As we cannot increase our production much over that of last year, and every one wants more paper, the above is the only course that we see open to us at this time."

Kraft paper has again gone up half a cent a pound, and jobbers have raised their prices accordingly. Quotations will soon be double what they were six months ago. Unglazed is now quoted at \$6.50 net, and glazed at \$7.00, delivered in Toronto. The increasing cost is due to the big demand for export, and the scarcity and high price for sulphate pulp as well as other contributing causes. The price quoted to jobbers now by one mill is seven cents in car load lots, seven and half on mill orders, and eight on stock lines for machine finish kraft. In sympathy with the high ruling prices there has been an augmentation in the discount on paper bags of five per cent.

Manila and fibre papers have been raised again, and mills have all the business they can take care of. The following figures now prevail in the trade: Grey or rag brown, \$2.85; "B" Manila, \$3.35; No. 2 Manila, (present stocks), \$3.65; No. 1 Manila, \$4.50; Fibre (basis 24x36-40 lbs. or heavier), \$4.50; Fibre (lighter than basis 24x36-40 lbs. down to 24x36-30 lbs.), five per cent extra. Samson, B, fibre kraft, or corresponding brands, \$4.00.

Recently the prices on greaseproof papers have been raised, and the figure now for 25 pound, natural colors, is ten and eleven cents, and for 20 pound, eleven and twelve cents. Greaseproof, half bleached, 25 pound, is twelve cents, and in 20 pound, thirteen and fourteen cents, while, in full bleach the figure is thirteen, fourteen and fifteen cents. In glassine natural colors, 25 pound, the figure now quoted is twenty and twenty-one cents, and in 20 pound, twenty-two and twenty-three cents. Half bleach is five cents higher, and full bleach is eight and ten cents more than in the natural colors.

One firm of coated paper manufacturers well size up the situation in that line when they state that, owing to the tremendous influx in orders coupled with the grave shortage of raw material and the uncertainty of deliveries, all prices have been withdrawn until further notice. It is utterly impossible to guarantee prices or deliveries for future business and all orders accepted are entered subject to the price being based on the cost of raw material at the time same as made.

Several envelope firms are making new lists and in the meantime have withdrawn prices. The withdrawal applies not only to stock lines but to making envelopes from stock furnished by customers. The producers are finding it difficult to obtain raw stock and have had to advance accordingly. The help problem is also bothering them a great deal as there is a scarcity of girls to operate machines. Makers of scribbling books, pads, copy books, etc. are increasing their prices and a revised list issued by one firm shows advances from ten to fifty per cent. Many scribbling books, where purchasers do not want to pay the extra price, are being reduced in the number of pages.

Box board mills cannot fill orders. In some cases for a couple of months and there are practically no present quotations on any line of board. All orders are booked subject to ruling quotations at the date of delivery. Paper Box factories are hard pressed for supplies and there have been raises on a number of lines in accordance with the elevated figure for board of all kinds which, on an average, is about fifteen per cent.

Thus the high cost of production affects all branches of the paper industry and knowing ones fear that quotations will go much higher if the war continues for any great length of time. Coated paper plants are hard put in many cases to get the raw stock and have refused orders from abroad preferring to attend to domestic demand in times such as the present. One large concern declined foreign business enough not long ago at a fancy figure that would have kept the plant busy for a whole year.

Ground wood is steadily going up in price and as high as eighteen and nineteen dollars is being asked at the mill. The reason for this is due to the number of woodsmen and bushmen, who have joined the Forestry Battalion for foreign service. Thus has depleted the men available for the camps and when operations start in full blast for the supply for next year, it is feared that wages will have to be increased very much and men imported from the western states to replace Canadian labor.

The situation in bleached sulphite is still serious and all lots offered are sold in some cases to the highest bidder. Kraft pulp is also very scarce and constantly ascending. As high as seven cents a pound is being asked for bleached sulphite in the open market and as much as \$75 and \$80 per ton for unbleached pulp at the mill.

Tissue paper has advanced ten cents a ream, and the following prices now prevail. No. 1 white bleached, 20 x 30 — 80 cents a ream, 24 x 36 \$1.15-ream, in jumbo rolls 11¼c. per lb.; natural sulphite tissue 20 x 30-65 cents, 24 x 36-85 cents, in jumbo rolls 8¼ cents per lb.; manila cap tissue, M. G. 20 x 30-50 cents per ream, 24 x 36-65 cents per ream, in jumbo rolls 6¼ cents per lb.

Paper.

News (rolls), \$2.10 up, at mill, in carload lots.
News (sheets), \$2.30 up, at mill, in carload lots.
Book papers (carload), No. 3, 5.50c.
Book papers (ton lots), No. 3, 5.50c to 6.25c.
Book papers (carload), No. 2, 6.00c to 6.50c.
Book papers (ton lots), No. 2, 6.50c up.
Book papers (carload), No. 1, 6.50c to 7.00c.
Book papers (ton lots), No. 1, 6.75c up.
Sulphite bonds, 6½ to 8c.

Writings, 6c. up.

Grey Browns, \$2.85 to \$3.50.
Fibre, \$4.50 to \$5.50.
Manila No. 1, \$4.50 to \$5.50.
Manila, No. 2, \$3.75 to \$4.50.
Manila, B., \$3.35 to \$4.00.
Unglazed Kraft, \$6.25 to \$8.25.
Glazed Kraft, \$7.00 to \$9.00.
Tissues, bleached, 90c to 1.50c.
Tissues, unbleached, 65c to 1.00c.
Natural greaseproof, 10c to 14c.
Bleached greaseproof, 15c to 20c.
Drug papers, whites and tints, 7c to 9c.
Paper bags, Manila, 50, 10 discount.
Paper bags, kraft, 40 discount.
Confectionery bags, 33 1-3 discount.

Pulp.

Ground wood pulp (at mill), \$17 to \$19.
Ground wood, \$20 to \$25, delivered.
Easy Bleaching Sulphite, \$70, del.
Sulphite, news grade, \$66 up, delivered.
Sulphite (bleached), delivered, \$1.15 up.
Sulphate, delivered, \$75 up.

Owing to the appeal made by the Department of Trade and Commerce by householders to save up rags and waste paper there are now plentiful stocks and prices are easier. The threatened shortage is over for a while but just how long the temporary drop in quotations will remain is problematic. Mills have not been very active in buying during the past few days.

Paper Stock.

No. 1 hard shavings, \$3.25.

No. 1 soft white shavings, \$2.75.
No. 1 mixed shavings, 55c.
White blanks, \$1.05.
Heavy ledger stock, \$2.25.
Ordinary ledger stock, \$2.00.
No. 2 book stock, \$1.00.
No. 1 book stock, \$1.50.
No. 1 Manilla envelope cuttings, \$1.60.
No. 1 print Manillas, 80c.
Folded news, 70c.
Over issues, 70c.
No. 1 clean mixed paper, 60c.
Old white cotton, \$4.50.
Thirds and blues, \$3.00.
No. 1 white shirt cuttings, \$7.50.
Black overall cuttings, \$2.50.
Black linings, \$2.50.
New light flannelettes, \$5.50.
Ordinary satinets, \$2.40.
Flock, \$2.55.
Tailor Rags, \$2.25.

Quotations f.o.b. Montreal are as follows:—

Book—News—Writing and Posters.

Roll News, \$40 to \$43 per ton for large orders; \$50 per ton for small orders.
Ream News, \$45 to \$47 per ton for large orders; \$55 to \$60 per ton for small orders.
No. 1 Book, 5¾c to 7c.
No. 2 Book, S.C., \$5.50 in large quantities; \$6.00 in small quantities.
No. 3 Book, M.F., \$4.50 in large quantities; \$4.75 in small quantities.
Writings, 5½ to 7½c.
Sulphite Bond, 6½c to 8½c.
Writing Manila, 5.65 to 6.00.
Cover Papers, 6½ to 10c per lb., according to colors wanted.
Colored Poster, 6½ to 7½c.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs when packed in cases.

Prices on wrappings now in effect:—

	Carload	Five	Two	One.	Under
& Jobbers.	tons.	tons.	ton.	1 ton.	
Cleaver, per 100 lbs.	2.60	2.70	2.80	2.90	3.00
B. Manila, do	3.00	3.20	3.30	3.40	3.50
Samson B., do	3.60	3.70	3.80	3.90	4.25
No. 1 Manila, do	4.00	4.10	4.20	4.30	4.40
No. 2 Manila, do	3.35	3.45	3.55	3.65	3.75
Invincible Striped Man., do	4.00	4.10	4.20	4.30	4.40
Fibre	4.00	4.10	4.20	4.30	4.40
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.					

NEW YORK MARKETS.

(Special to Pulp & Paper Magazine.)

New York, N.Y., April 22, 1916.

There is no doubt that ground wood pulp is strengthening, and that the market will advance to a very high level before many months have passed. A large manufacturer expressed it as his opinion during the past week, that ground wood most likely would advance to about \$40 a ton delivered. This seems rather incredible. However, should the demand continue as it is

at the present time, it seems plausible that this prediction may be fulfilled. To-day's market is firm at about \$25 delivered. Grinders all over the country are very active, and are working at full capacity. The news mills and the other consumers of ground wood are using as much raw material as their machines will allow, and the indications are that they will continue to do so for several months. With the summer coming on it is possible that low water troubles will be encountered, which will tend to curtail the production of ground wood, and help to force its market value higher.

The markets for chemical pulp are more acute now than ever before. There appears to be a fair demand for practically all grades of stock. However, there is little available for immediate shipment. The domestic mills are reported to be sold ahead for some time, and have only occasional lots of stock to offer. The imports for the past few weeks have been unusually low—so much so that the situation is almost alarming. Manufacturers are said to have paid large premiums in order to insure themselves of promptly obtaining lots of pulp. Opinions seem to agree that the futures will be firm for some time. The important question now is whether or not we will receive large shipments of stock from Scandinavia after the Baltic Sea is navigable. Current reports would seem to indicate that the United States will not receive its usual quota of stock. In the first place, the figures for open water shipment are higher than those which are now prevailing, which shows that the foreign producers do not intend to lower the market. The entire continent of Europe, England included, is in urgent need of pulp.

Considerable importance is attached by some of the possibility that England will continue to prohibit the importation of wood pulp. Such an action, it is thought, would leave so much more pulp available for the United States. However, it is also possible that Scandinavia will be able to dispose of the surplus created by England's withdrawal from the market, more profitably among the other European countries. If the paper market eases up during the summer, it will have a somewhat similar effect on pulp. Whether the market is active or not, the consumption is generally necessarily reduced during the summer, owing to the number of small mills which depend entirely on water power, and are therefore forced to shut down a good part of the time. Then, while it may be easier to obtain wood pulp, it is not likely that prices will be any lower. Bleached sulphite is scarce, with a good inquiry. Unbleached is strong, with dealers showing a willingness to pay high prices. Easy bleaching has been in good demand at high figures, but stocks of any quantity are not to be had. Krafts have become worse each week. The demand for stock continues great, but now quotations are considered practically nominal for little stock is being offered.

In rags, a most unsettled conditions exists. It is rather hard to specify any exact quotation for any grade, because there is really no market. The mills are, to a large extent, holding firm to their decision to stop buying for about a month. During the early part of last week, a little interest was shown in stock, and it was felt that the market would start to become active again. But these hopes were only short-lived, because by the end of the week, things were absolutely dull. The small dealers who were scared when the market first broke, and sold at low prices, are now holding fairly firm. Most of the dealers are simply

waiting, looking for a chance to buy up "bargains," and anxious to get stock together for storing purposes. At present, most of the large dealers report that their warehouses are practically empty. They have sold their goods at the high market, and hope to replenish their supplies at lower figures. The general opinion seems to be that prices will soon go up again. It is figured that the mills are consuming more stock than ever before, whereas they have little on hand. On the basis of this reasoning, a scramble for rags is expected. Present reports indicate that our rag imports, which have been considerably reduced, will be almost entirely cut off. Word has been received that Italy has placed an embargo on rags. It is also understood that Spain is contemplating such an action, and that Holland may find it advisable to do likewise. France will not allow any stock to leave her shores, while England is now considering extending her embargo so as to make it cover rope and bagging. At this rate, it will be necessary for the mills to rely entirely upon domestic collections. The only way to keep domestic collections up sufficient to take care of the needs of the manufacturers is to place a good value on rags. Dealers expect activities to resume soon, and to continue right through the summer.

In bagging of all grades, there has been a slump in activity. This market has been affected similarly to rags. However, few sales have been heard at low prices, so it is understood that dealers are holding. The news that England is likely to place an embargo on bagging and on rope is causing many of the dealers to look for a strong market within the near future. Rope is off a bit in price, in common with rags and bagging. But it is expected that the ascendance will begin again soon.

The waste paper market has been affected more than the others because waste papers are not stored as much as rags. In mixed papers, for example, which are not stored, the market was forced down to about 60c per 100 lbs., from about 1c. per pound. While the other grades have not suffered so severely, they have been considerably affected. Krafts have been reported at as low as 2 1-2c. Shavings are holding fairly firm. The board mills and the roofing mills are not buying unless they can secure very low prices, and are doing much to bear the market. A reaction is expected soon, which it is said will force prices up again.

The paper market is active, with a splendid demand for all papers. It is said that this demand is not quite so strong as that which existed last week. News-print is one of the chief concerns. The supply of news is very small, while the demand is unusually great. Reports received show that the news mills are actually shipping much more than they are producing. What is alarming is the fact that the mills have comparatively little stock in store—some have none whatever. This is due to the fact that there is generally a dull season during the early part of the year, when it is possible to put aside some stock in the warehouse, but there has been no such opportunity this year. Meetings have been held in New York City between the manufacturers and the publishers, to show the latter just what the exact conditions are, and to urge that they be conservative in using their supplies.

Wrapping papers are all active, and high in price. Krafts have been reported at as high as 10c. Manilas and fibres are in demand at good prices, with few mills taking orders for delivery within less than one

month. Good white sulphite tissues have been reported as high as 90c, while sales of No. 2 white tissue are known to have been made at 70c. This market is firm. Book papers are hard to get, because the mills are all filled up. Boards are high and advancing.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$24 to \$25, delivered.
Ground Wood, No. 2, \$20 to \$24 delivered.
Unbleached Sulphite, dom., 3.35c, delivered.
Easy bleaching impt., 4.10 to 4.40c, ex-dock, N.Y.
Bleached Sulphate, impt., 6 to 61-2c, ex-dock, N.Y.
Bleached Sulphite, impt., 6 to 7c, ex-dock, N.Y.
Unbleached Sulphite, impt., 3.70 to 4c, ex-dock, New York.

Kraft Pulp, impt., 4.50 to 4.75c.

News, Rolls, transient business, unobtainable.

News, Sheets, 3c.

Paper.

News, Rolls, contract renewals, 2.35c f.o.b.

Book papers, car lots, S. & S. C., \$62 to \$67, f.o.b.

Writing paper, extra superfine, 14c. to 17c., del. east of Miss. River.

Writing paper, superfine, 13 to 15c, del. east Miss. R.

Writing paper, No. 1 fine, 10c, del. east Miss. River.

Writing paper, No. 2, fine, 9½c, del. east Miss. River.

Writing paper, engine sized, 7½ to 11c, east Miss. R.

Bond paper, 7½-12c to 24c, delivered east of Miss R.

Ledger paper, 7 1-2c, to 25c, delivered east of Miss R.

Linen paper, 12c to 18c, delivered east of Miss River.

Manila jute, 10c, delivered.

Kraft No. 1 (dom.), 8c, f.o.b., New York.

Kraft, No. 2 (dom.), 6c, f.o.b., New York.

Kraft, imported, 8c, ex-dock, New York.

Boxboards, news, \$52 per ton, delivered.

Wood pulp board, \$55 per ton, delivered.

Boxboards, chip, \$50 per ton, delivered.

Tissue, fourdrinier, 65c, f.o.b., New York.

Tissue, white, cylinder, 70c, f.o.b., New York.

PUBLISHERS CONFER ON PAPER SHORTAGE.

Three hundred publishers from all over the United States recently attended the Thirtieth Annual Convention of American Newspaper Publishers' Association, held in New York. The one great topic under discussion was the shortage of white print paper and the best means of overcoming this shortage.

Because of the demand of print paper is expected to be greatest, as usual, during the next thirty days, the publishers were urged to employ every method of saving, even to the cutting down or margins.

Reasons for the shortage of white paper were outlined in a report by Lincoln B. Palmer, manager of the association. He pointed out that the demand for print paper began to increase in the spring with the increase of circulation and the greater demand for advertising space. In addition, the European war had diverted from England and Scandinavian many South American publishers, who were now seeking paper in the American market. Furthermore, the manufacture of higher grades of paper, also, has drawn heavily on the supply of materials for lower grades.

That the consumption of print paper has been increased largely by the demand for increased advertising space in newspapers was indicated by the report of the committee in charge of the bureau of advertising.



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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.

Air Compressors:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Digester Lining:

Advace Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Drainer Bottoms:

Snell, Samuel, Co., Holyoke, Mass.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Ont.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Que.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 Crookes, Roberts & Co., Sheffield, Eng.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada
 Carthage Machine Co., Carthage, N.Y.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Norwood Engineering Co., Cowansville, P.Q.,
 Progress Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada.

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Fox, Stockell & Co., London, England.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

MILL SUPPLIES---Continued

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Stuff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.
Process Engineers, Ltd., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones & Glasco, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Canada.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Booth, J. R., Ottawa, Ont.
Bronson Co., Ltd., Ottawa, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Chicoutimi Pulp Co., Chicoutimi, Que.
Davy, James, Thorold, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
MacLaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Pulp Co., Campbellford, Ont.
Ontario Paper Company, Thorold, Ont.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Bathurst Lumber Co., Limited, Bathurst, N.B.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merrittton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catherines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

ristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

uilding and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

oardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

arpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

oated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

orrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

over:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

velope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

elts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

ibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

ibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

lour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

lazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

langing:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Tees & Persse.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Tees & Persse.

VANCOUVER, B.C.:

Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104½ Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

PORT ARTHUR, ONT.:

Tees & Persse.

TORONTO, ONT.:

Barber-Ellis Co., Ltd., 71 Wellington Street W.
Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

MONTREAL, QUE.:

Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill.
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.

QUEBEC, QUE.:

Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

FOREIGN:

Salomon & Co., Felix, New York City.
Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., England.
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York.
Scandinavian American Trading Co., New York, N.Y.

WANT AND FOR SALE

FOR SALE at an attractive price. One Bache-Wigg Barking Drum, with following dimensions: Bache-Wigg Barking Drum, approximately 9ft. 6in. diameter, by 10ft. long, built of boiler plate steel, supported on hollow trunions which work in roller bearings; it is driven by spur gears, jack shaft, and friction pulley. For information address "York," Pulp & Paper Magazine of Canada, 35-45 St. Alexander St., Montreal, Que.

POSITION WANTED—"Backtender," 23, wishes position on fast news, where steadiness and ambition are rewarded. Apply Box 112, Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal.

WANTED GOOD BEATER MAN used to Common Grades of Wrapping papers and Kraft Stocks, For Mill in Canada, Country district. Cheap rent about \$4.00 per month. Board in Comparison. Apply stating salary required to Beatman, Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal.

NEW YORK FIRM will consider proposition to finance New Pulp or Paper Mills or extensions. Write full details in confidence to K. L., Box 47, Room 1201, 220 W. 42nd. St., New York, N.Y.

WANTED—Machine and back tenders. Harper and Fourdrinier machines. Apply, Box 114, Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal, Que.

BRITISH CANADIAN JOBBERS.—Wants samples and best cash prices f.o.b. Montreal or Quebec opening of navigation of all qualities of Paper, Boards, Bags and Pulp. Also particulars of tonnage available next six months. Jobs and special lots solicited. Address Export, c-o Pulp and Paper Magazine, 35-45 St. Alexander St., Montreal.

POSITION WANTED by experienced Sulphite Cook, Apply Box 113 Pulp & Paper Magazine, 35-45 St. Alexander St., Montreal, Que.

Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	62

B

Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	13
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	16
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	
Churchill & Sim.....	62
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D

Darling Bros, Ltd.....	
DeCew, J. A.....	65
Dean & Son.....	14
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
J. Ford & Company.....	14

G

Galt Knife Co., Limited.....	14
Glens Falls Machine Works.....	6

H

Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	62
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K

Klipstein, A. & Co., Ltd.....	7
-------------------------------	---

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Mackinnon, Holmes & Co.....	6
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15

N

National Paper Co.....	63
Northern Crane Works, Ltd.....	62
Norwood Engineering Co. of Can. Ltd.....	60

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66

S

Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Scott, Ernest & Co.....	
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Snell, Samuel Co.....	62
Spencer, J. H. & Scns.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	
Ticonderoga Machine Works.....	
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

W

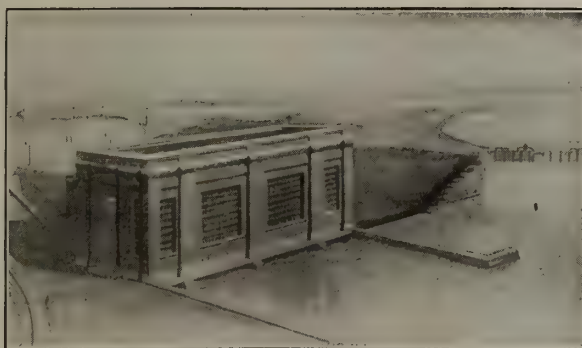
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	62
Winn & Holland.....	62
Witting Bros.....	66



Barber Paper Mill, Georgetown, Ont.



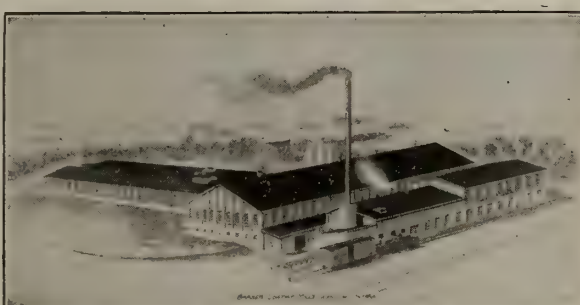
Montrose Paper Mill, Thorold, Ont.



Montrose Power Plant, Merritton, Ont.



St. Lawrence Paper Mill, Mille Roches, Ont.



Barber Coating Mill, Georgetown, Ont.

Provincial Paper Mills Co. LIMITED

General Offices :

TELEPHONE BUILDING - - TORONTO, Canada

Books for Paper Makers

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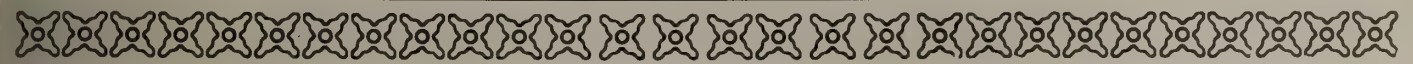
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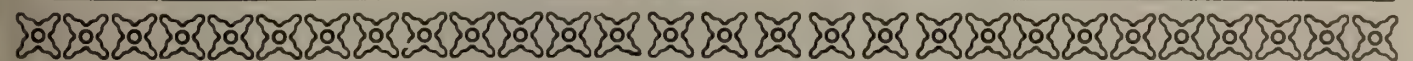
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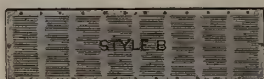
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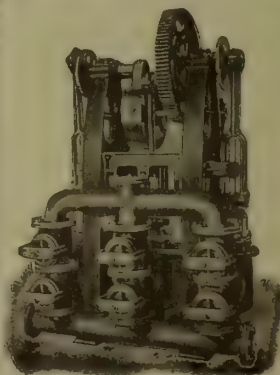


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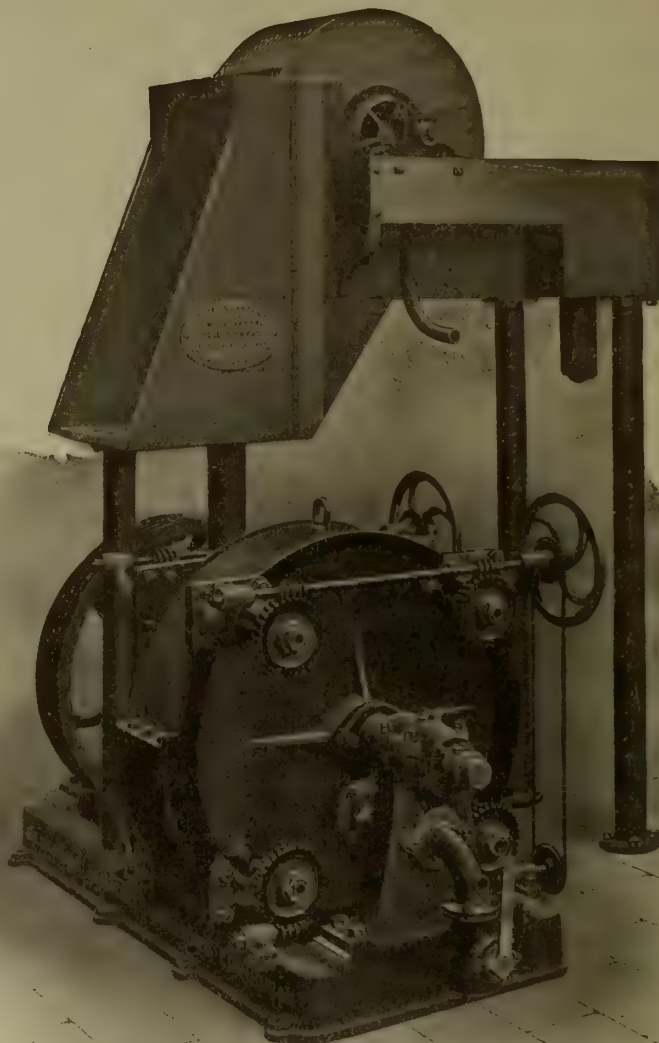
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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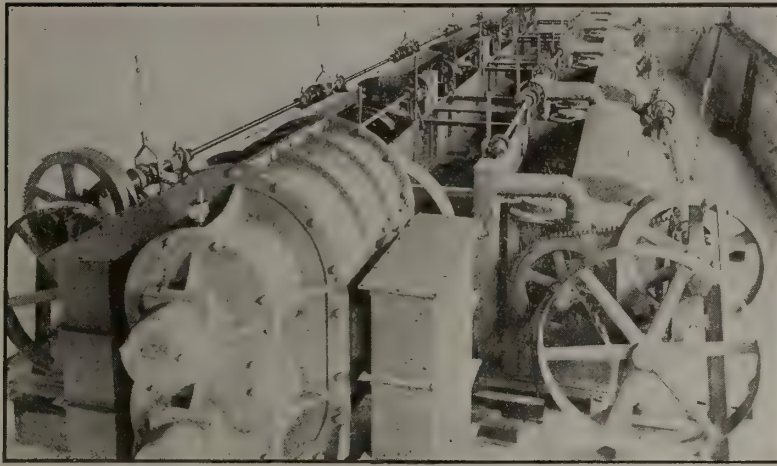
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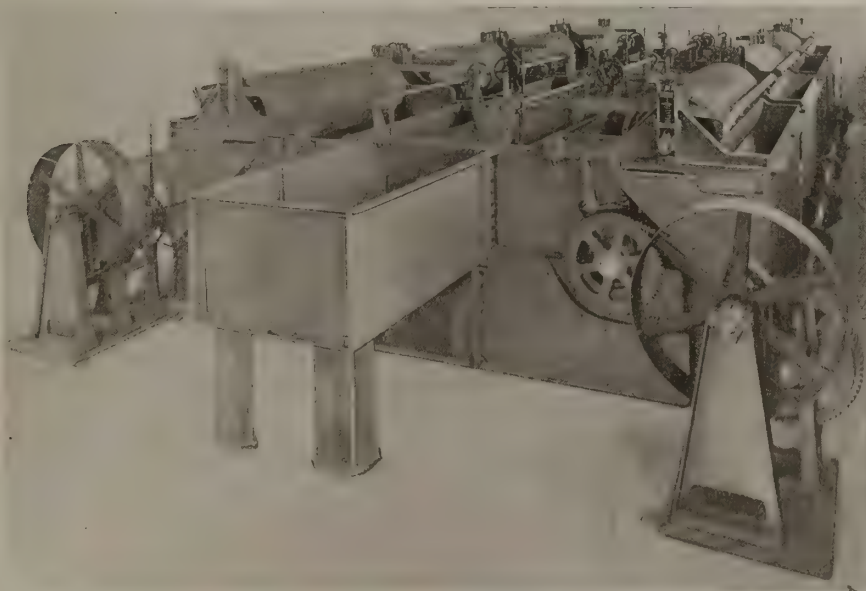
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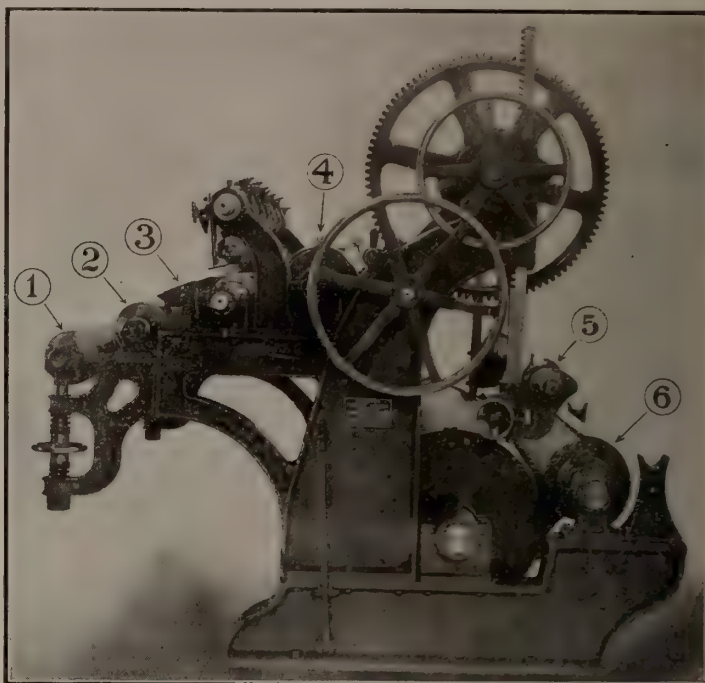
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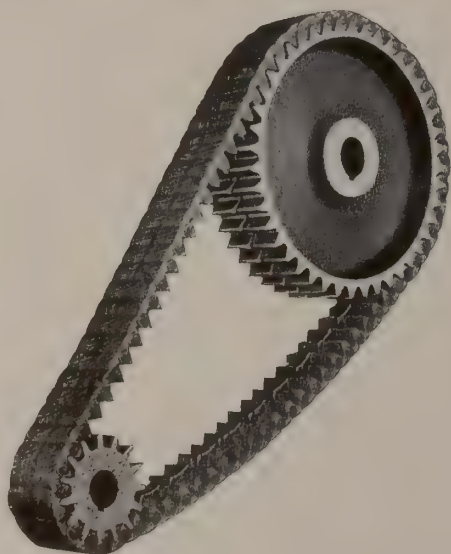
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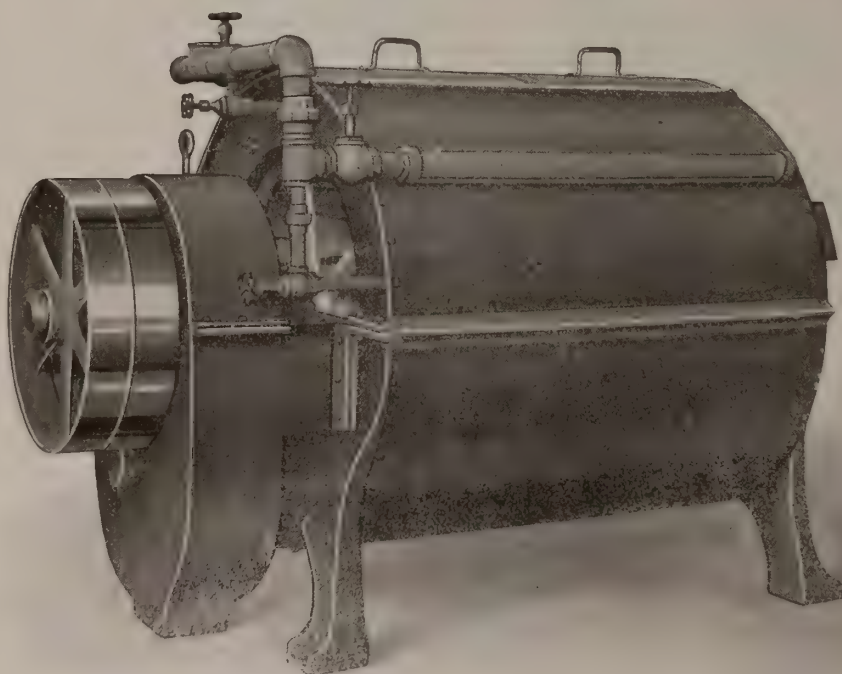
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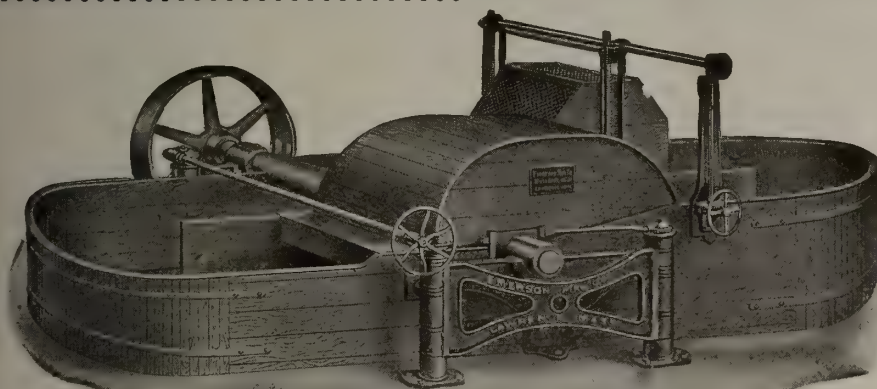
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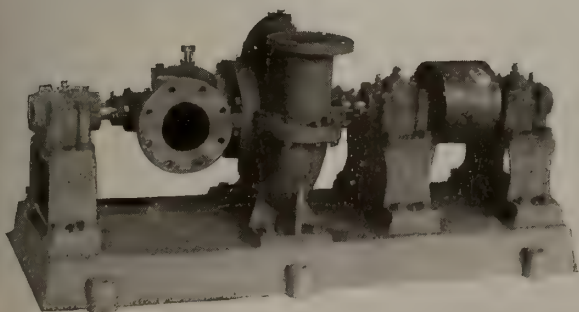
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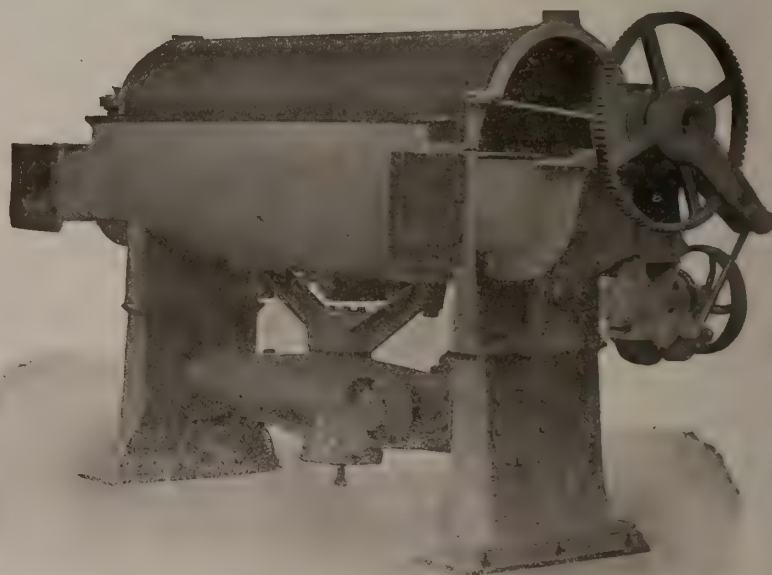
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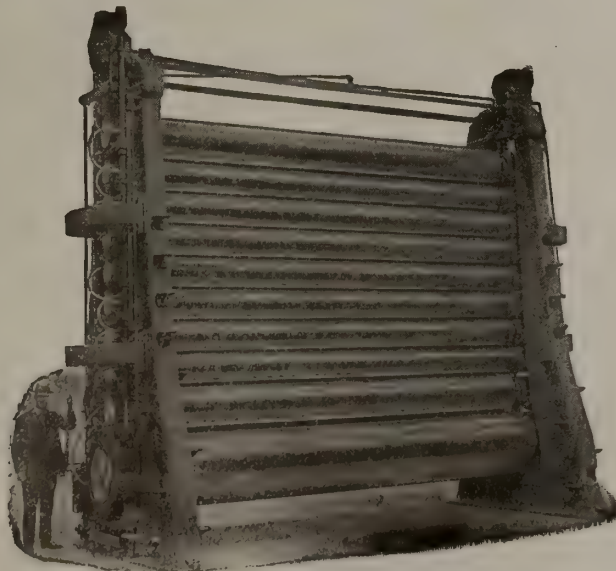
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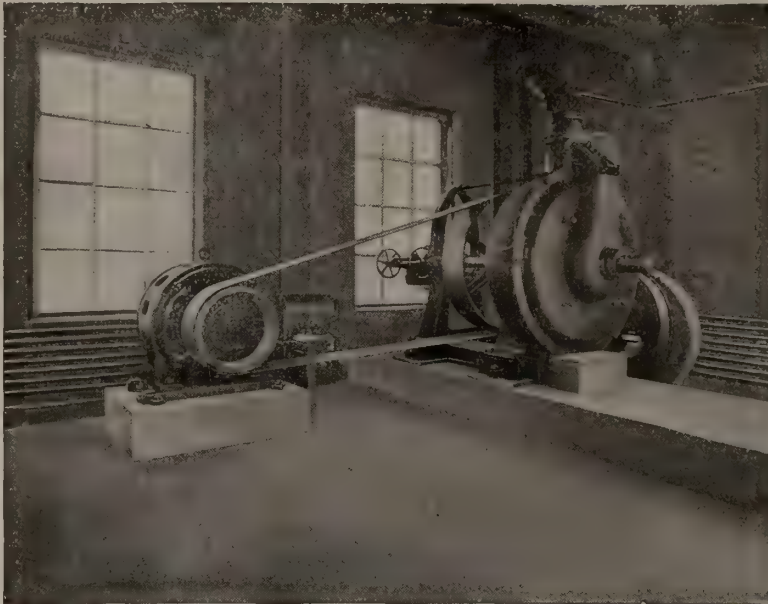
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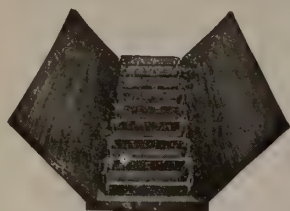
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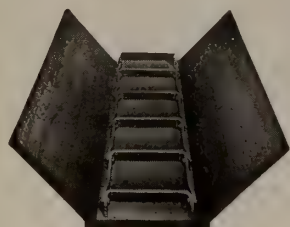
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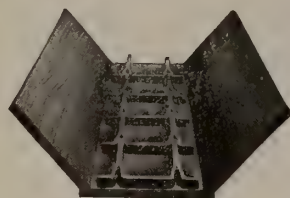
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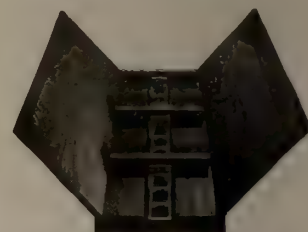
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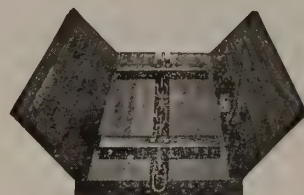
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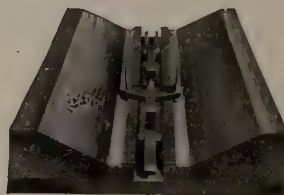
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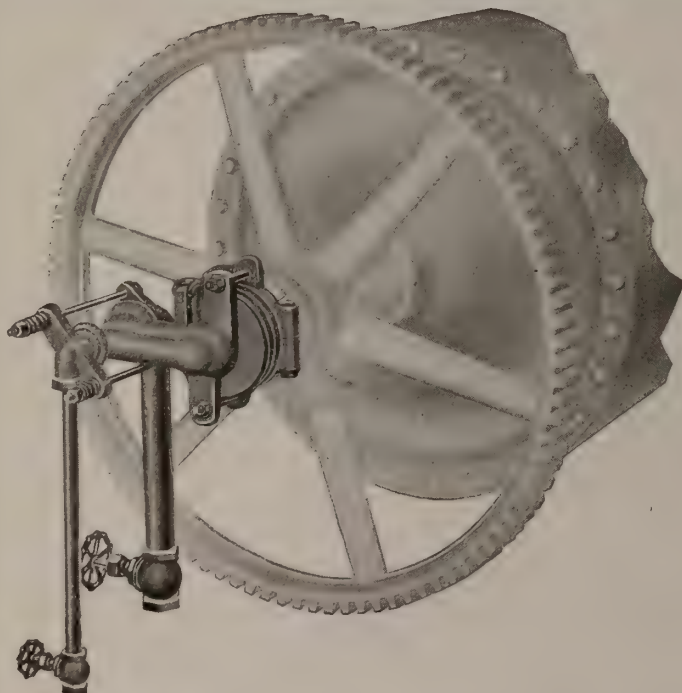
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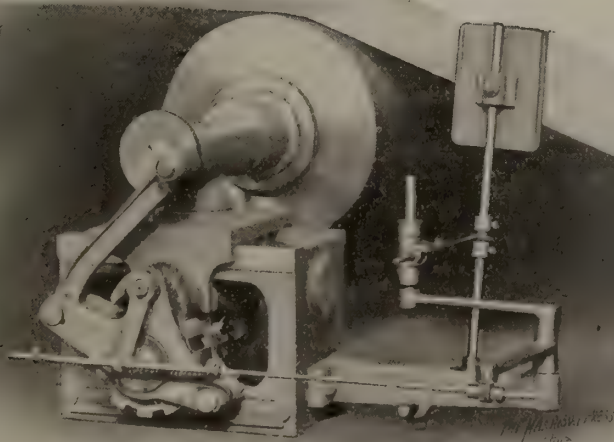
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You will note from the illustration that the pawl when engaged in teeth of ratchet wheel, has a full bearing surface, eliminating wear, also eliminates the purchase of many expensive ratchet wheels and pawls used on other types of Wire Guides.

When the wire is running in the centre of machine the pawl cannot transmit any motion to the guide roll. Should the wire travel to the other side of the machine, the positive and quick action of the pawl would immediately cause the Wire Guide to properly align the wire.

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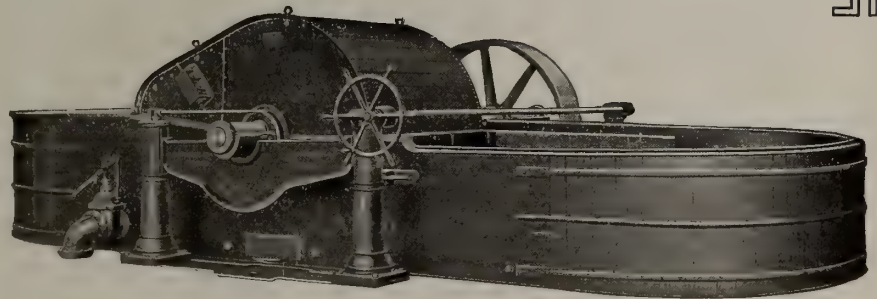
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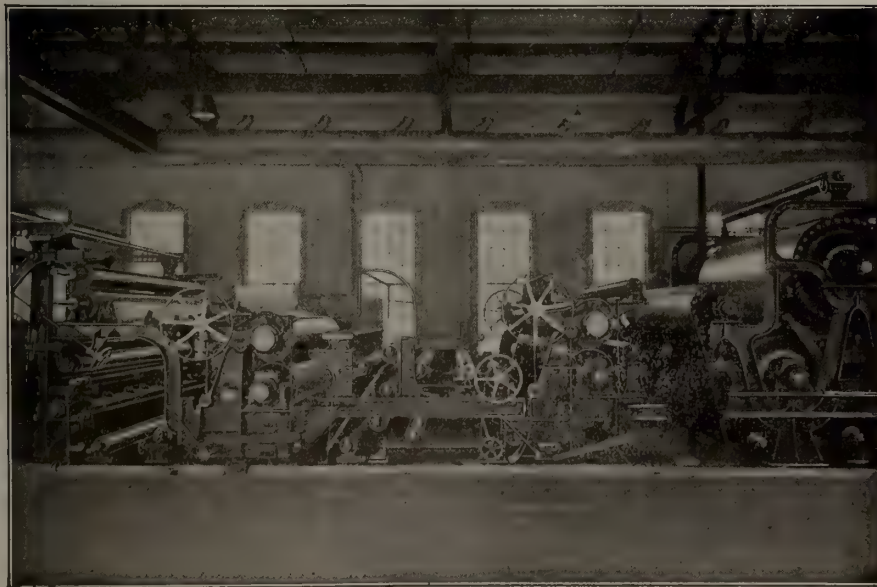
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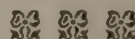
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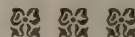
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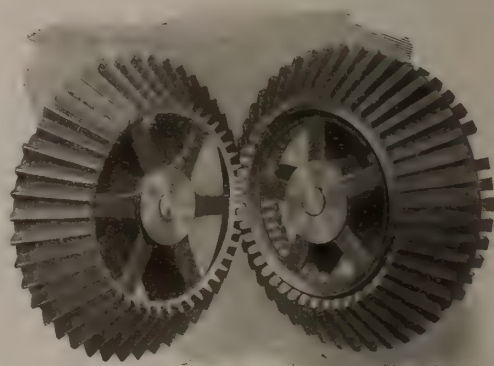
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VOL. XIII.

MONTREAL, MAY 15, 1916

No. 10

Nearing the Maximum Output

A report recently issued shows that Canadian paper mills are now doing the biggest business in their history. For March and the first three months of the year, mills on this side of the Line have attained a new high record, and far surpassed the United States in percentage of output. This is partly explained by the fact that the Canadian mills are larger, more modern and concentrated on specific grades of paper.

In the three months ended March 31st, Canadian mills produced 128,892 tons, or a daily average of 1,674. This compares with a total production in 1915 of 428,858, or a daily average of 1,383. In other words, for the first three months of this year, our Canadian mills ran to 95.9, or practically 96 per cent of capacity, as compared with 85.2 per cent in 1915. Across the Border the American mills ran 87.5 per cent of capacity for the first three months of the present year, as compared with 81.2 per cent in 1915.

In percentage of shipments, Canada also led her neighbor, shipping 125,743 tons, or 93.6 per cent of the maximum as compared with 265,000 tons shipped in the United States, or 88.6 per cent of the maximum. Altogether it looks as if the big development in the pulp and paper industry was to be north of the 49th Parallel, and that the Canadian mills, with their superior equipment and greater possibilities were doing a bigger business per mill than their neighbors to the South.

The United States Pulp and Paper Industry

The pulp and paper industry on this Continent is one of the largest and most important of all our industries. According to a recent United States census report, which covered the year 1914, it is shown that 727 establishments in that country engaged in the industry in that year, while five years previous reports were received from 792. Of the number reported in 1914, a total of 503 manufactured paper alone, 63 woodpulp alone, and 161 both paper and woodpulp.

The production of woodpulp in 1914 amounted to 2,894,000 tons, an increase of 400,000 tons from the report of five years previous, or an increase of nearly 16 per cent. In addition to domestic production, imported pulp to the extent of 534,000 tons was used in 1914, a gain of 77 per cent over the figures for 1909. There were also 371,000 tons of rags, 1,577,000 tons of waste paper, and 1,121,000 tons of straw used. The value of paper produced in the United States in 1914 was \$294,355,000, an increase of a little over 25 per cent in the five years. News print amounted to 1,313,000 tons, valued at nearly \$53,000,000. Book paper was valued at \$73,500,000; fine paper \$34,000,000; wrapping paper \$49,000,000; woodpulp, news board, etc., \$41,000,000.

The above figures indicate that the pulp and paper industry is a large and important one in the neighboring Republic.

National Enrollment

Great Britain has at length adopted conscription. In Canada the word seems to strike terror into the hearts of our politicians, and many of our business men, and yet there is really nothing to be frightened of in the word, or what it is supposed to do. Possibly it would be better to call it National Enrollment or National Service, but to a business man it is really nothing more or less than a national stock taking.

No business man worthy of the name would think of undertaking a great commercial enterprise without taking stock of his resources in workmen, in raw materials, in transportation facilities, markets, etc. Canada, as part of the Empire, is engaged in a world war. Does it not seem reasonable for our Government to set down quietly and take a census of the available men and see who can be spared from industries, who must be kept at home to keep the machinery going, in brief, take stock of our resources in men, money and material.

We all know that many men are enlisting who should be at home making munitions, clothing, engaged in transportation or increasing the production of our farms. On the other hand, we all know perfectly well that there are thousands of young men without home or business ties, who are engaged in non-essential tasks, such as clerks in stores and offices, and those engaged in undertakings which have little or nothing to do with the prosecution of the war. The present hit-and-miss method of securing our recruits has a tendency to cripple industries which should not be handicapped, while in many cases, men are allowed to remain behind who could well be spared. Why not face the situation seriously and organize? It would be good business and good military tactics to do so.

Canadian Research Bureau

The Canadian Pacific Railway and others interested in the establishment of the Canadian Research Bureau, deserve the warmest praise for having brought this about. The Bureau have secured the services of Mr. Arthur D. Little, a well known engineer of Boston, and a former President of the American Chemical Society. Mr. Little is eminently qualified to head such an organization, and we predict that it will be productive of much good.

In brief, the object of the new research bureau is to investigate, organize and systematize our resources. It will carry on a scientific investigation of the mineral, metal, hydro-electrical and chemical resources of the nation and formulate plans for the lessening of the waste in our forests, factories, mines and mills. The results of the Bureau's investigations will be sent out to manufacturers, merchants and others interested in the form of bulletins. It is a timely organization, as it

is high time that this country took stock of its resources and put a stop to the extravagancies and waste which have characterized us in the past. Efficiency is the watchword of the day.

THE UTILIZATION OF WASTE IN LUMBERING.

Waste in the logging industry in the United States and Canada amounts to 15 to 20 per cent of the timber cut, or about a billion and a half cubic feet of wood, although not all of its absolute waste. The claim is made that only 320 feet of lumber is used for each 1000 feet that stood in the forest.

It was the prodigious waste of American forest resources that led the United States Bureau of Foreign and Domestic Commerce to plan a thorough study of the methods of utilizing the waste products of the lumber industry, in the United States and in those European countries that have made the most distinct progress in this line. In the older and more thickly settled countries of the old world necessity led to a careful utilization of the forests many years before the subject was seriously discussed on this Continent. And in these older countries many methods have been worked out that should be of value here now that the old-time wasteful methods have been brought into disrepute. The plan was to have the American industry profit as much as possible by the hard earned experience of the older countries.

Unfortunately the war upset the plan completely, and there is no immediate prospect of making the proposed investigation. But as the bureau has already engaged Prof. H. K. Benson, a well known authority on the subject, it was decided to go ahead and make a study of the subject in this country. The bulletin just issued is the result of this study. It gives a definite idea of how far the manufacture of lumber by-products has been developed in this country, how far it may reasonably be expected to develop in the future, and just what some of the problems are that confront the industry.

There is a complete review of the wood distillation industries, the manufacture of tannin extract, the manufacture of the various kinds of wood pulp used in the paper industry, the production of ethyl alcohol from sawdust, the manufacture of producer gas, and a number of other minor products. The extent to which these industries are carried on is outlined, and in cases where an industry is not prospering a discussion is given. Import and export statistics are included when available.

The annual production of wood pulp in the United States is valued at over \$80,000,000. Sulphite pulp makers are considerably interested in the possible utilization of the sulphite waste liquor for the recovery of sulphur or other profitable utilization. This would result in a lowering of the cost of sulphite pulp. The manufacture of kraft pulp is also becoming well established, and is bringing about the utilization of cheaper wood.

The utilization of wood for the minor processes described in this report is not excessive. The manufacture of alcohol from sawdust has hardly passed the experimental stage, although technical men are optimistic as to the ultimate success of the process. One of the most interesting possibilities lies in the use of hydrolyzed sawdust as a carbohydrate cattle food.

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UNION BAG AND PAPER CO.

The committee appointed to consider recapitalization plan for the Union Bag and Paper Co. has prepared a scheme calling for reduction in the present capital by about one-half. For new working capital there may be issued \$1,000,000 of new preferred, which will be offered to shareholders at par.

There is outstanding \$11,000,000 preferred, and \$16,000,000 common. If 50 per cent of these stocks is eliminated it would bring share capital down to \$13,500,000 and total capital, including \$3,379,000 bonds, down to less than \$17,000,000, which is probably within \$5,000,000 of actual value of assets exclusive of timber land equities, of rather uncertain worth.

The new management of Union Bag and Paper inherited a very hard task, and it has made commendable progress in the direction of getting Union Bag and Paper on its feet. The company has twice within two years avoided receivership by a hair. This danger is now happily past through the elimination of a floating debt of \$1,400,000, and the expenditure on property of \$600,000—this latter sum being in major part derived from sale of non-used properties.

The management of Union Bag and Paper can see ahead in 1916 a year of excellent earnings. All surplus above charges will, however, be required to provide additional working capital and to pay for \$400,000 of plant improvements which are needed to finish rehabilitation work.

THE LATE MR. ANGUS.

Mr. William Angus, a former president of the Canada Paper Company, and later General Manager of the Royal Pulp and Paper Company, has just died in Montreal in his 82nd year.

The late Mr. Angus was born in Scotland, but came to America as a boy of fifteen. After a few years' residence in Boston and New York, he came to Canada and engaged in the pulp and paper business. He first associated himself with Buntin, and next formed the paper manufacturing firm of Angus, Logan & Co., which in 1872 was merged into the Canada Paper Company, of which concern Mr. Angus was president. Mr. Angus' next venture was the establishment of paper mills at East Angus, Que., under the style of William Angus & Co. This firm was later merged into the Royal Pulp and Paper Company, Mr. Angus being for many years general manager. He retired from active business a few years ago. He married Miss Jean Paton, of Montreal, who survives him with five sons and three daughters. Mr. Angus was a former president of the Caledonian Society and a life governor of the Montreal General Hospital.

R. D. Warren, for many years manager of the Standard Publishing Co., Toronto, which is the headquarters for the Baptist publications, has resigned. He is a former Georgetown newspaper publisher.

The Manufacture of Paper Pulp From Straw

AN ACCOUNT OF THE OPERATION OF WASHING, BREAKING, PURIFYING AND BLEACKING THE STRAW

One of the most satisfactory accounts of the manufacturing operations involved in the cooking of straw for pulp was contained in a paper by James Beveridge, read some time ago before the Society of Chemical Industry. The availability of straw as a source of pulp is again receiving consideration owing to the increasing scarcity of the papermaking materials ordinarily used. This is particularly true as regards paper mills in England, where it is deemed possible, according to "Paper Making" (from which we take extracts from Mr. Beveridge's paper), that the increasing difficulty of obtaining raw materials may lead to a more general use of straw.

There are two kinds of pulp made from straw — viz.: strawpulp proper, and what may be more correctly termed straw cellulose. The former is made by steeping the straw or boiling it under pressure with milk of lime until it is thoroughly softened, after which it is washed and ground with suitable machinery and manufactured into a cheap quality of wrapping paper. This method is employed extensively in France and other countries of the Continent where there is a demand for such papers, but is not used in England to any great extent, excepting probably in the manufacture of strawboards.

Although the subject of this paper has nothing to do with this kind of strawpulp, yet it may be mentioned incidentally that the chemical action of the milk of lime on the incrusting materials surrounding the straw fibre is not a vigorous one. These incrusting materials are not completely nor, indeed, to a great extent separated from the cellulose. The mineral matter remains in the product practically untouched, and if any less quantity than that corresponding to the percentage in the original straw operated upon exists in the prepared pulp, it is due rather to the washing after digesting than to any solvent action of the milk of lime. The milk of lime, under certain conditions, has a bleaching action on the straw. It neutralizes the organic acids usually formed when fibrous plants are heated for any length of time in presence of water. The yield of pulp obtained by such a treatment amounts to from 75 to 85 per cent. The papers produced from this pulp are of a very poor quality, and wholly used for packing purposes. They are hard, brittle, and possess a low tensile strength. The preparation of pure cellulose from straw is a very different manufacture, and involves a cycle of operations each of which requires the most careful supervision. The product is used for the production of papers of first-class quality, fine and medium writings, for example, and must be well prepared, and as free from dirt as it is possible to get it. It is, therefore, necessary that cleanliness be observed in every department and that the straw itself and the water used for washing be subjected to a preliminary purification as necessity may require before they enter the mill.

The straws usually employed for the preparation of cellulose are those obtained from the cereals, oats, wheat, rye, and barley. In some parts of the Continent maize straw has also been used, but with only moder-

ate success, as it yields a somewhat coarse fibre. Next to wood, oat, wheat, rye, and barley straws are the most universally distributed fibrous plants known as sources of paper pulp. In point of cheapness they also rank next to wood, which is recognized as the cheapest source of cellulose at present known in this country. The physical character and composition, especially with regard to their ash contents, vary enormously. This is true not only of the different kinds of straw, but also of the same variety, and seems to depend upon the district or country in which they are grown. Probably the soil has influences on the composition of the ash as well.

The fibres contained in the straws are loosely bound together by resinous and intercellular matter, which is easily dissolved by caustic soda, and subsequently separated by washing. Thus isolated they are soft, flocculent, and admirably adapted for use in the manufacture of high class writing papers. They differ slightly from one another in their papermaking qualities; the fibres from barley straw, for example, differing from those of oat, wheat and rye in length, breadth, and general physical character. This difference is very noticeable when the pulp from each of these straws is separately brought forward in the mill. It is not very difficult to classify the straws according to the nature of the fibre or cellulose they yield, although such a classification is true only locally. As regards Dutch straws, the following bears directly on them: Barley straw yields a very short fibre of low felting power. The knots and husks are soft, and in consequence this kind of straw is easily digested. Oat straw is usually somewhat harder; the knots and husks are more difficult to digest. The fibres it yields are comparatively long, soft, and of medium felting power.

Manufacturing Operations.

Cleaning.—The straw, as it is brought from the stacks or storehouse, is first of all passed through a machine to open it thoroughly, or this may be done by hand. It is then delivered or placed upon tables made of wire gauze, one-quarter inch meshes, alongside of which girls stand, whose duty it is to remove all weeds and other plants likely to produce what is known as shive in the finished pulp. From these tables it is elevated either automatically or by hand to the cutter, which usually consists of the ordinary chaff cutter used by farmers. The straw is fed continuously by an endless travelling belt through an orifice, across the face of which at right angles to the feed a wheel revolves, having one or more knives attached to its spokes. The length of cut varies from half an inch to one and a half inches. From this the chaff falls on an inclined jogging sieve of one-eighth inch wire gauze, and in travelling to the lower end the bulk of the sand, husks and fruit grains are separated. Although the chaff at this stage is tolerably well cleaned, some manufacturers prefer to give it a final sifting, and to do this they employ a revolving sieve, through the centre of which a shaft revolves at a high velocity. This shaft has pegs studded along its length at equal intervals, and so placed as to form a kind of archimedean

screw. The sieve is cone-shaped or slightly inclined, and as the chaff travels forward all loose dirt is separated, being carried through the meshes by the current of air induced by the revolving shaft. It is then stored in heaps and ready for the pulp boilers.

The object in subjecting the straw to such a trenchant system of cleaning as above indicated is to remove all foreign weeds, husks, fruit grains and sand. This is absolutely necessary for the production of high-class pulp, for it has been found by experience that these impurities produce more or less unbleachable particles, and much of the success attained in avoiding these imperfections depends on the completeness and care with which the straw is primarily cleaned before it enters the pulp boiler. The loss incurred by cleaning will depend upon the quality of the straw, but it should not exceed 5 per cent of the total weight operated on.

Digesting the Straw in Caustic Soda Lye.

The boilers usually employed for doing this are of the rotary type — either cylindrical or spherical. Very seldom are upright stationary boilers used. The reason for this seems to lie in the necessity of keeping the mass within the boiler in a continual state of motion, so that each particle of straw will be equally acted upon by the caustic lye. This cannot very well be attained in stationary boilers, even with the usual vomiting arrangement, because the chaff, when softened by the lye, sinks down into such a dense, solid mass as to interfere with the free circulation of the lye through it.

Of two rotary boilers mentioned, the spherical type offers certain advantages over the other. It occupies relatively less floor space, is more easily filled and emptied, and presents less radiating surface per unit of capacity. These boilers are usually provided with two man-holes and a blow-off cocks, and are heated by steam injected through the trunnion. Motion is given to them by means of worm gearing fixed to the standards supporting the boiler.

The strength and volume of the caustic lye employed necessarily vary in different mills, according to the kind of straw used, and upon other conditions peculiar to the nature of the apparatus in use—e. g.: the steam arrangements of the mill. Both are slightly modified when barley straw is used alone, but as in actual practice the best results are obtained by mixing the different kinds of straw and keeping the mixture as nearly as possible constant, any rule laid down with respect to the proportion of caustic lye required is adhered to from day to day. The actual quantity of caustic soda, reckoned at 60 per cent alkali, also varies slightly with different kinds of straw, as well as on the temperature and speed with which the digesting operation is carried out. Where the temperature is high, and the time given for the boiling is long, the caustic is reduced to a minimum.

The following figures, representing the charge of a strawpulp boiler, are from actual practice:

Weight of straw (mixture of oat and wheat)	4,480 lbs.
Gallons of caustic lye	1,610
Hours under steam pressure	4
Steam pressure above atmosphere	60 per sq. in.
Maximum temperature	307 deg. F.

Caustic Lye.

Twaddell	10½ deg. F.
Total weight in lb.	16,945

Percentage by volume of 60 per cent alkali	0.5416
Percentage by volume of Na_2O	0.3249
Total 60 per cent caustic soda in lb.	872
(Pounds of 60 per cent caustic alkali on 1 cwt of straw = 21.8).	

The operation of digestion is very simple. The pulp boiler is filled as full as possible with the cut and cleaned chaff, and the required volume of caustic lye run in. The man-lid door is then put on and a small quantity of steam admitted while the boiler is made to revolve for fifteen minutes or so in order to soften the straw and cause it to subside to make room for more. When this is done, the lid is again removed, and the vacant space within the boiler filled up with more straw. In this way the charge of straw per boiler is increased from 15 to 20 per cent. When the boiler is thus filled and the man-lid fastened on, high pressure steam is injected into the charge through the trunnion, and the pressure gradually raised to the desired degree. The pressure varies in different mills, but as a rule it registers from 60 to 90 lb. per square inch. This pressure is reached after about two hours' steaming, and is further maintained for four or four and a half hours. In the meantime the boiler is kept continually revolving.

Washing, Breaking, Purifying and Bleaching the Straw.

After the digesting operation has been completed, the whole contents of the boiler are emptied into a tank placed beneath it, where the crude cellulose is washed with hot water. It is necessary to accomplish this work with the least possible quantity of water in order to avoid undue dilution of the waste lye. The most efficient method is that of the application of the principle of displacement as carried out in the lixiviating of ball soda in the Leblanc soda process. It is possible in manufacturing practice to remove 95 per cent of the soda associated with the boiled straw cellulose by this system of washing with a dilution of about one-third, that is to say, the pulp can be washed in the tanks with a quantity of water, represented by one-third of the volume of black lye associated with the pulp. The weakest washings from these vats are run to waste, as it does not pay to evaporate them even though the most refined system of evaporation be used for their concentration.

After the bulk of the black soda lye has been removed in the way described the crude cellulose is allowed to drain, and then conveyed to a breaking engine, in which it is broken up into pulp.

In this engine it is again washed to remove the last traces of soda, and a proportion of the intercellular matter surrounding the fibres, as well as any dirt, will pass away with the wash water. That part of the intercellular matter carried away is in a fine state of division, and if it be left in the pulp it is supposed to consume a large quantity of bleaching powder in the subsequent bleaching. As a matter of fact, however, if the straw be properly boiled in the first instance the intercellular matter has little influence on the amount of bleach required to bleach unit-weight of crude product. It is possible to wash strawpulp in the breaking engine to such an extent as to seriously affect the yield of pulp, and therefore the bulk of the washing can be most advantageously done in tanks.

Absolutely no Rags to Come From England

(Special to Pulp & Paper Magazine.)

New York, N.Y., May 12, 1916.

Word has been received that England will absolutely not allow the export of any rags to the United States. This was learned after an investigation into a rumor which was current for the past week that the roofing manufacturers had succeeded in persuading Great Britain to allow considerable rags to come to this country. However, the latest news on the subject would indicate that there is no possibility of any rags coming from England for some time.

It will be remembered that shortly after the embargo had been declared, a number of roofing paper manufacturers decided to bring the influence of the United States Government to bear on the British Government to allow the export of certain grades of rags. Everyone knew that there was considerable stock in England which was too poor in quality to be used, but which would do very well in roofing stock. Basing their hopes on the fact that cash would be very acceptable, especially when no use could be found for these rags, the roofing men had every confidence that they would gain their aim.

During the past week, the rumor was spread that the permission had been granted for the export of the waste rags, which could not be put to use in England. Immediately upon reaching the market, the rumor had the effect of forcing the already depressing prices still down further. It was feared that large quantities of roofing stock would come to this country, so a great many dealers immediately lowered their prices to get rid of stock. However, an investigation by your correspondent revealed the fact that the State Department at Washington, D.C., received a cable from the American Ambassador in England, stating that absolutely no rags would be allowed for export shipment. It is likely that this news will have the effect of strengthening the market on roofing rags.

INTERNATIONAL PAPER.

International paper is putting its financial house in order at a most satisfactory rate. It is understood that at the end of March the balance of floating debt had declined to \$2,500,000, a figure which contrasts eloquently with the \$5,450,000 of banking debt carried only 15 months before. When the 1915 fiscal year closed Dec. 31, International Paper had bank loans of \$3,400,000, a \$2,000,000 reduction during the year. In the March quarter a further big slice has been cut from this hateful item, and the company is to-day nearer free of floating debt than at any time for ten years.

Press reports carry the story that International Paper will expend \$1,500,000 at Berlin, N.H., in building a new mill and enlarging its property at that point.

This story is absolutely without foundation. International Paper is not contemplating the erection of any new mill. Such property expenditures as it is making are designed to improve the efficiency and lower the cost of production as its already well-established mills.

Wrapping Paper Men to Consider Cost Accounting

(Special to Pulp & Paper Magazine.)

New York, N.Y., May 12, 1916.

One of the most important projects now being considered by the various divisions of the American Paper and Pulp Association is the formulation of a standard method of cost accounting in the manufacture of paper. For years the bane of the industry has been the concern which kept its books in a haphazard fashion, and whose system of arriving at costs was irresponsible and inaccurate. Such a concern—there are many of them—has generally been responsible for a break in the market and reckless competition, which resulted in a season of unprofitable business.

The executives of the American Paper and Pulp Association have long watched the methods of its members, but were able only to suggest that they adopt some well planned scheme for reckoning costs. Heretofore, these suggestions have received little or no attention. It is not to be expected that the manufacturer who has a system which has been operating in his office for some time, would willingly offer to consider the expense which must necessarily be entailed by the installation of a new system. So there has been practically no heed given to the suggestions that a proper and an efficient cost accounting plan be formulated and adopted.

Events during the past year, however, have shown rather clearly that some mills were suffering sadly from their disregard of actual cost knowledge. During last summer, when business was dull, orders were taken at prices never before believed even conceivable. That the paper makers of this country lost money during the season, is unquestionable. Competent authorities claim that, had these manufacturers been guided by a thorough cost system, the trade history for the past summer would not be so replete with business which was taken at an actual loss. Nor would it have been possible for concerns to accept a large volume of business for delivery at some distant date at a figure which allowed no profit. It is a well known fact that many paper mills were hampered with such orders as those just mentioned, after the prices of raw material had advanced and the expense attached to the manufacture of paper had increased considerably. It is also known that, during the past few months, when the market was rising constantly, that most advances were not the result of actual sound calculations. While many concerns benefitted well from their increased figures, there are a number which have fared ill.

It is to alleviate these and other possible harmful effects and to put the trade on a more substantial footing that the Wrapping Paper Manufacturers' Association has called a meeting of its cost accountants, for May 9, at the rooms of the Association at 18 East 41st Street, New York City, and will most likely continue for a few days. This meeting is considered of unusual importance, and will be watched closely by the industry in general, for many reasons. In the first place, it will be the first real gathering which will have been brought about for a discussion of cost accounting matters. Hitherto, such an assembly was regarded as being next to unlikely. Should a majority of the wrapping paper manufacturers be represented, as is ex-

pected will be the case, it will stimulate a similar interest in other divisions of the parent body, the American Paper and Pulp Association. Above all, whether anything is accomplished or not, whether a common understanding is arrived at, or not, the exchange of ideas among experts on the subject will undoubtedly compensate all who are interested, for their interest. If the wrapping men are able to formulate a model system for cost accounting, it will act as an incentive to manufacturers of other papers and other similar meetings are bound to follow. In short, should the wrapping men achieve their purpose, it will not be long before the entire industry will be on a sounder basis than has hitherto seemed possible.

Naturally, there has been much speculation as to the possible outcome of the scheduled meeting. Many questions will arise about which there may be a serious division of opinion. It is understood that the method of charging ground wood pulp to cost will receive much attention. Some manufacturers who produce their own ground wood, have been basing their cost on the actual expense incurred in making, while those who have to buy in the open market feel that the market value of the pulp should be the base for accounting. Many other matters, similar in nature, will be considered.

WANT CANADIAN PAPER.

The New York Times, in urging action that will admit Canadian print paper freely to the United States, says:

"It will be recalled that the Canadian reciprocity treaty, which failed as a whole, contained one clause which survived and remains effective. That clause allowed free entry into the United States of Canadian paper and pulp when made from wood whose export was unrestricted in any manner, as by requirement of license or payment of export duty. The Dominion imposes no restrictions upon export, but the Provinces do, especially Quebec and Ontario. In order to promote the home manufacture of the raw material the Provinces restrict the export of the wood so that it may be sold as paper. The restriction applies especially to the Crown lands in the Provinces, which supply nine-tenths of the Canadian product, and the United States was able to give free admission only to the products of fee lands. There is no intention to criticize the action of the Provinces, for it is too much like our own tariff practice not to be understood and excused, by protectionists at least. But the war has changed conditions. We need the wood more and would buy greedily the paper or pulp made from the wood. Canada also is under stronger need to sell all of them than to protect home manufactures at this time. Canada needs larger credits in the United States, and could supply herself with them in no easier or better way than by making this large item of export eligible for free import to the United States."

EXIT PAPER, ENTER SLATES.

Obsolete and unsanitary slates may be brought back into schools in the United States on account of the shortage of paper.

Cheap paper writing tablets now used in schools may disappear, or what is more likely, become prohibitive in price. Common five-cent tablets now contain little more than one-half the sheets they did before the beginning of the war, and paper firms say they are being furnished at an effort.

Newfoundland Notes

(Special to Pulp and Paper Magazine.)

St. John's, May 10.

The Anglo-Newfoundland Development Co., after a good deal of construction work, has converted Heart's Content, Trinity Bay, into a suitable shipping port, and in future a large part of the company's increasing output of paper will be exported from the mills at Grand Falls via this port. Until this year the company sent all its product to Botwood, and from thence it was freighted to England, but last year this port was not ice free till late in the spring, and this, together with the fact that the output was last year the largest in the history of the company, a congestion of pulp and paper resulted at Botwood. Every available shed was requisitioned to accommodate the accumulation which was daily becoming greater, and before the port became free for shipping, considerable loss had been sustained. Heart's Content is, therefore, in the nature of a safety valve for the exports from the mills, and it is expected that in future a large part, if not all, winter shipments will be made from this port. A large shipping pier, freight sheds, and a short branch railway were recently completed, and the port is now ready to handle shipments. Heart's Content is about one hundred and twenty miles south of Botwood, it is an ice free port all year round. It is the deepest, largest, and on the whole one of the finest harbours in Newfoundland. In 1858, when the first trans-Atlantic cable was landed in Newfoundland, Heart's Content was made the terminus as being the only port in the country able to accommodate the Great Eastern, the cable ship. Heart's Content is still a great cable centre.

The paper mills of the Anglo-Newfoundland Development Co. are running full blast, the cut of logs during the winter was large, and everything points to the fact that the output this year from the mills will be a substantial increase over that of last year. Last year Newfoundland led all other countries in its export of "news" paper to the United Kingdom, which amounted to 477,896 tons. No shipments of pulp and paper have been made yet this spring, though in a few days it is expected several cargoes will have been taken away.

The House of Assembly which has just closed, passed during the session a Timber Bill relating to the exportation of pit props from Newfoundland. The bill is an amendment on the measure passed last year, which allowed the exportation of pit props from the Colony till the end of 1916. By the new enactment provision for the exportation of pit props is made until Dec. 31st, 1917, or six months after the proclamation of peace, whichever is the shortest period. When the Government brought in the measure the Opposition announced their intention of opposing it as far as possible. But on the day following the introduction of the Bill the Opposition announced that in view of certain facts which had been confidentially handed to them, they were prepared, on behalf of the Empire, to make a sacrifice and allow the bill to go through.

The Bill as it now stands provides that the minimum price to the cutter shall not be less than \$5.00 a cord for unrimmed, and \$6.00 a cord for rimmed pit props in the bond, and that a man shipped by the month shall not be paid less than \$30.00 a month and found.

The green timber, however, on the three mile limit will be reserved, though dry timber will be allowed to be taken over this territory.

There is also a measure passed last year which allows the exportation of pit props from Labrador for a period of ten years.

But contractors for pit prop cutting owing no doubt that plenty of timber was available in Newfoundland for their purpose, have not to any extent engaged in cutting in any part of that country, though there is no limitation such as three mile limit reserve.

Mr. E. W. B. Wally, an English timber expert, who has been in Newfoundland during the month of April, left the country last week for England. Mr. Wally was in Bonne Bay, looking over a large timber area which is owned by Salter & Sons, of Nova Scotia, in the interests of English capitalists who are contemplating the purchase of it from its present owners. It is stated that a figure with six digits is being offered for the property, as it is one of the best timbered as well as being among the most extensive in the country.

Owing to the increase demand for timber there has been a marked demand recently for timber areas all over the country, and from all sources comes the news that several of the best limits are at present either being leased or optioned to American and English parties who intend purchasing as soon as the areas are cruised. In the interior of the country there are now a number of timber cruisers examining timber areas, and we hear that several of the best blocks of timber in the country will likely be sold this summer.

The first cargoes of pit props and pit wood left the coast this week for England, and, according to the Trade Review the best informed trade publication in the country there is yet 200,000 cords or more of last winter's cut of pit props still remaining to be exported. The scarcity of shipping is still very serious, and trans-Atlantic freight rates are now \$15 a cord. The SS. Industry, a steamer of more than four thousand tons gross, which last summer freighted thousands of cords of our pit props to England, was sunk recently in the North Sea by a German submarine.

The beginning of what is expected to develop into an enormous industry was made this spring, when a number of factories for the making of herring barrels were constructed. Owing to the high prices being paid for this food in the American market the fishery will be prosecuted on an enormous scale this year in Newfoundland. The article is to be Scotch packed, for which method the barrels used to contain the article are to be of standard size, and hard wood must be the material used. Birch is being utilized, as it is the only hard wood obtainable in quantity in Newfoundland, but it exists only to a very limited extent, so that in the very near future it will be necessary to import large quantities of hard wood yearly from Canada for barrel purposes.

A NATIONAL PARK.

President Wilson has been asked to accept on behalf of the United States Government, a tract of 5,000 acres of land on Mt. Desert island, Maine, as a national park and memorial to early settlers.

American Newsprint Situation

(Special to Pulp and Paper Magazine.)

New York, May 10, 1916.

After enduring for a few weeks accusations by various small newspaper owners, and several members of the House of Representatives, accusations that they were conspiring to force the price of newsprint to a prohibitive level, the manufacturers, through their Newsprint Manufacturers Association, which has its headquarters at 18 East 41st Street, this city, filed an application with the Federal Trade Commission asking for an investigation of the industry. This action came somewhat as a surprise to the legislators at Washington, who were interested in seeing trouble come to the paper men. So that the petition for an investigation was really a means for forcing the issue to a point where all concerned would be compelled "to show their cards."

Within the past few weeks the situation in the news print market has become very acute. So great has been the demand for paper, that the mills have all been operating at maximum capacity, and have actually been shipping more than 100 per cent of production, by means of drawing on their warehouses. The result has been that an actual shortage of news print now exists, and that many small publishers, who had neglected to look after their requirements, were unable to get papers. Several of these found it necessary to buy available stock from jobbers, and other second-hand sources, and were compelled to pay as high as 3.75c for stock. Immediately these publishers complained to their representatives in Congress, claiming conspiracy and a violation of the Sherman Anti-Trust law on the part of the news print manufacturers. The legislators, apparently ignorant of conditions and entirely unfamiliar with the commonly known facts in the case, introduced bills into the House of Representatives asking for an investigation, and charging conspiracy. Probably six of these bills were framed and introduced. The last of these, the author of which was Senator Owen, of Kansas, decided the question with the news men, who immediately conferred with each other, and determined to settle matters then and there.

The Owen Bill is as follows: "Resolved, That the Trade Commission is hereby requested to inquire into the increase of the price of print paper during the last year, and ascertain whether or not the newspapers of the United States are being subjected to unfair practices in the sale of print paper."

In its petition the News Print Manufacturers Association calls attention to the number of resolutions which have been introduced in Congress, urging an investigation of the high price of print paper, by the Federal Trade Commission, and referring, in particular, to Mr. Owen's bill. It stated further that about 85 per cent of the news print manufactured in the United States and Canada was sold on annual contract, and that these contract prices had not increased more than one per cent during the past twelve months, and that they would not average more than the price at which it was contracted and sold for during the past ten years. The petition referred to the adverse newspaper comment as having grossly misrepresented the news print manufacturers and stated that they would consider it a privilege to furnish the Commission with information with which to carry on the investigation.

The attitude of the industry is shown in the fact that a member of Canadian mills have offered, voluntarily, to testify in the hearing and to produce any information with which might be needed in carrying on the work. This unexpected and absolutely uncalled-for offer on the part of the Canadians, who are in no way bound to bother themselves about an investigation to satisfy a commission of the United States, is regarded very highly and places the news print manufacturers, as a whole, in a much respected light.

Already the Senate has authorized, the Federal Trade Commission to commence its activities in the way of an investigation, under the Owen bill. It is expected that the House of Representatives will confer similar authority on this body, under one of the bills now confronting it. Dr. F. W. Walker, chief economist, will outline a plan of action for the Senate Commission. According to information thus far received, the investigation will be purely economic. It will be divided into two parts: (1) to make a report on prices and conditions and (2) to start some connection measures if anything is wrong. The commission will send to the various news print manufacturers sets of questions relating to various phases in regard to costs, which will bear to be answered. Judge Timothy T. Ansberry has been retained as counsel for the paper interests.

Much discussion is current in Washington and the various representatives are interested in getting together information which they believe will help them in incriminating the news men. Representative Ferris received the following letter from the Bureau of Foreign and Domestic Commerce:

"In compliance with your request over the telephone for an explanation of the probable cause of the increase in the price of news print paper, I take the pleasure in offering you the following suggestions:

"Since the outbreak of the war, there has been a large withdrawal from the world's market of news print paper as well as of the materials which enter into its manufacture. On the other hand, the war has brought about an unusual demand for news print paper, the war news causing more editions of newspapers to be printed and increased circulation.

"News print paper is composed of 65 to 75 per cent of ground wood pulp and 25 to 35 per cent chemical pulp, together with a certain amount of china clay for surfacing, and some minor materials. Since the outbreak of the war, there has been a material increase in the freights and in the prices of Scandinavian and Canadian wood pulp. There has been a considerable reduction in the supply of wood pulp and paper which was formerly obtained from the Scandinavian countries and Germany. The increase in the price of sulphur which enters into the manufacture of chemical pulp, as well as the higher prices of china clay and other materials, have also affected the price of news print papers.

"Furthermore, the large exports of news print paper from Germany and some other belligerent countries to America and other parts of the world have been entirely or mostly cut off, resulting in increased exports from the United States. In fact, the world's demand for news print paper appears to be far in excess of the supply since the outbreak of the war."

A letter, such as the above, would seem to vindicate the news manufacturers and make an investigation unnecessary. But now that so much misrepresentation has been done, the paper men feel that the only vin-

dication with which they will be satisfied will be that which results from a thorough inquiry.

Secretary G. F. Steele, of the association, is very enthusiastic over the coming investigation and is already at work compiling data for submission to the commission. Mr. Steele feels that the various accusations against the news print manufacturers have been made from some political motive, without sincerity, and that the results of the investigation will prove this to be true. That the large newspapers, and the American Newspaper Publishers Association in general are not promoting the influence against the paper manufacturers, but that the perpetrators are small, inconsequential "sheets" seems to be apparent. At the recent annual meeting of the newspaper association, the question of paper shortage was intelligently discussed and the actual conditions were recognized. Today, instead of complaining the large newspapers are all endeavoring to curtail their paper consumption and thus avoid a possible famine. It is a fact that over 50 per cent of the contracts for news were made in November and December and that these contracts run through the year 1916, at last year's prices. Mr. Steele claims that, until very recently, he has heard of no increased selling prices which were demanded on annual contracts by manufacturers of news. The fact is that, in his weekly letters to his members, Mr. Steele has been constantly urging them not to advance prices unless such advances were abundantly justified by increased cost of manufacturing.

All of the news men appear happy at the opportunity of being able to show the public, through an investigation the conditions which actually exists in the industry.

VESUVIUS SULPHUR BURNERS.

The Vesuvius Sulphur Burner which is now being installed in a number of chemical plants throughout the country, is aptly named. Chemical pulp manufacturers interested in the latest appliances would do well to visit the Nichols Chemical Company's plant at Sulphide, Ont., where two burners each of seven tons capacity, have been installed by the Waterous Engine Works Company of Brantford. These are the first machines of this type built in Canada, and as they embody several new ideas, the claims made by the manufacturers that they are superior to any other in use, should convince the intending purchaser of the advisability of investigating the good points of this burner. A number of Vesuvius burners are already in use in the United States where they have met with marked success. The Pulp and Paper Magazine understands that the Waterous Engine Works Company have several orders for these burners on their books, which they are rushing to complete.

GROUND-WOOD PULP.

J. H. Thickens and G. C. McNaughton, of the Forest Products Laboratories at Madison, Wis., just issued a book entitled "Ground-wood Pulp" which has been published by the United States Department of Agriculture as Bulletin No. 343.

This bulletin summarizes several years of experimental work carried on in the laboratories at Wausau and at Madison, and is full of most interesting and valuable data relating to the groundwood pulp industry.

The Pulp and Paper Magazine hopes in subsequent issues to publish parts of this valuable bulletin, the book having reached us too late to enable us to do anything but give it this mention in the present issue.

Why Paper is Dearer, and What the Manufacturer is up Against To-day

By G. B. VAN BLARICON.

(Specially Written for Pulp & Paper Magazine.)

Perhaps some consumers and purchasers of paper are still wondering why prices are constantly ascending and are at a loss to understand the reason of the advances being frequent and inevitable. There are many contributing causes, any one of which might be responsible for the producer getting more money for his product.

At the beginning of the war, advances on paper-making materials began to be felt. The manufacturer took care of all increases for a time, and the consumer, although frequently advised, did not become alarmed, and allowed his stock to be steadily depleted, refusing to take conditions seriously. Gradually the gravity of the situation became apparent, and he became "panicky," ordering for immediate delivery quantities which formerly would have supplied him for six months. Wholesalers and printers could not understand why mills were unable to furnish this unusually large quantity on short period delivery. Each purchaser appeared to think he was the only one who desired supplies. Now, the paper manufacturer could not increase the product of his plant, as previous to this unusual demand, he was running fairly well up to normal, and to install additional machines would take from one to two years' time. Even if he felt favorably inclined to instal a further machine, it might be quite difficult to raise from half a million to a million dollars in war times, and if installed, it would not give relief for at least one year.

The question arises in the mind of the buyer, Does the increased price only cover the increased cost, or are the manufacturers taking advantage of the shortage? After a careful study of the present market on raw materials that enter into the manufacture of paper, we are inclined to think that the cost of paper in Canada to-day does not cover the increased cost to produce. The embargo on foreign supplies cut off the Canadian mills from stock which they formerly obtained from Great Britain, and pulps from Norway and Sweden. Domestic pulps, which can be exported free of duty into almost any market, were greatly sold up, at very high prices, and the Canadian mill had to pay for Canadian top prices. For any supplies he could obtain in the American market, he was compelled to pay the highest price there, plus the duty into Canada. On top of this has come the scarcity of labor, both skilled and unskilled, for the various plants have contributed large numbers of men to fight the battles of King and Country. Wages have also increased. The added cost to-day for the covering of a paper machine, owing to the scarcity of supplies, most of which are used in the manufacture of munitions of war, is surprising. Felts have gone up from \$1.00 to \$2.25 per lb., wires from 28c to 41c, and repairs and parts from 100 to 200 per cent. If one should take the pains to look up the New York market reports of last year on soda ash, bleach, alum, casein, china clay, and compare them with the market reports of to-day, it would not be difficult to locate the trouble. Aniline colors are, of course, practically unobtainable. So far no suitable dye stuff has been produced in America to

take their place, and fabulous figures have been paid for colors wherever they could be obtained. Some colors have sold as high as \$30 and \$40 per pound, while previous to the war any desired quantity could be obtained for from 25c to \$1.00. Bleach has been sold as high as \$14 per 100 lbs., alum from 4½c to 5c, where it was formerly 1c per pound.

It is doubtful if there is a paper market in the world but what is short of paper. France is only producing 20 per cent of her normal amount, England about 45 per cent, and there is no market in the world but what is prepared to pay a higher price than the Canadian mill is to-day asking for its product; but in spite of this the Canadian manufacturer of book and writing has not exported one car of paper in the last six months, while previously he was shipping from one to two cars a month. This, of course, does not apply to News Print, as there is no duty on this class of paper, and Canadian manufacturers have always exported from 75 to 80 per cent of their product. Previous to the war, in 1913, Canada imported \$8,000,000 worth of paper, which to-day is practically cut off for two reasons; first, Great Britain has no paper to export, and second, the United States manufacturer is getting a higher price than the Canadian manufacturer is asking. This cutting off of imports, and the fact that Canadian concerns, who previously bought advertising and other printed matter in Great Britain and the United States, are now purchasing in Canada, has increased the demand on the Canadian paper manufacturer tremendously. On account of the uncertainty of the market on raw materials, labor, and the greatly over-sold condition of the product of Canadian mills manufacturing book, writing, etc., they refuse to make contracts for other than immediate requirements, and are meeting the abnormal demand by "playing no favorites," each mill taking care of its own customers as well as possible, and trying to supply them with the same tonnage as supplied previous to the present unsettled conditions. With the mills unable to cover themselves for their supply of raw material at any definite price into the future, they in turn refuse to give prices on their product, but are selling at the market on date of delivery.

How long the present conditions of the paper market will continue is very problematic, some of the larger mills think that matters will smooth out within the next six months, but it is doubtful if they will be able to obtain any relief until after the war.

The Department of Trade and Commerce at Ottawa has circulated the homes of Canada to save waste paper and rags, as it is hoped by this means to assist greatly in supplying the mills with an increased quantity of material. It is the duty of the printer, lithographer and allied paper trade to co-operate and conserve all their waste, and see that it goes toward the relief of Canadian mills, as this material can be used in the manufacture of book and writing, and tend to diminish the demand on sulphite pulp, which is very scarce at the present time.

ABITIBI MAKING NEW RECORDS.

Although the Abitibi Pulp and Paper Company only commenced operating their news mill the first of November, 1915, they are now turning out more newsprint than any other paper mill in Canada. On some days they are producing 240 tons of news which brings their monthly average up to a very high figure. The company reports that business is excellent and that there is a splendid demand for everything they have to sell. Other paper companies report a similar condition of affairs.

CEMENT ACID TOWERS.

Apparently there are no limit to the uses to which cement can be put. The J. D. Jenssen & Company, builders of sulphite mills in New York City, are now building reinforced concrete acid towers. This company are now building three towers for mills with a capacity up to 75 tons of sulphite per day. Two of these towers are used as limestone towers and one as a reclaiming tower. They are also replacing the milk of lime system with their tower system and in doing this, the company state that they are following the practices in such countries as Norway and Sweden where the limestone system has entirely replaced the milk of lime system.

The development which has taken place in the pulp and paper industry make it imperative that manufacturers should make their plants of the very latest design and equipped with the most modern machinery.

SOWING FOREST TREE SEEDS

The Earl of Selborne, president of the Board of Agriculture, has communicated with the members of the Royal English Arboricultural Society through their president, Lord Barnard, urging the need for sowing forest trees this year. Even small sowings, he says, would be useful, for in the aggregate a large number of seedlings might result, and he specifies the trees likely to be most in demand, after the war, namely, larch, common spruce, Sitka, spruce, Scots pine, Douglas fir, silver fir, Corsican pine and beech. Lord Barnard heartily support the appeal.

FORMER PULP AND PAPER EDITOR GOING OVERSEAS

Mr. Roy Campbell, formerly Editor of the Pulp and Paper Magazine and now Secretary of the Montreal Branch of the Canadian Manufacturers Association, and Secretary of the Canadian Pulp and Paper Association, has been chosen as Secretary of the Trade Commission recently appointed by Sir George E. Foster, to go to Europe and investigate trade opinions for Canada with the allied nations. The Commission consists of several well known manufacturers from Winnipeg, Toronto, Montreal, Quebec and St. John. They sail from New York on Wednesday, and expect to be absent for three or four months. During that time they will visit France, Italy, Russia, Belgium and Great Britain and formulate plans as to how Canada's trade with these countries can be increased at the close of the war.

TO LIST WAYAGAMACK.

Application has been made to list Wayagamack Pulp and Paper issues on the Montreal Stock Exchange.

TORONTO PAPER COMPANY.

The annual statement of the Toronto Paper Company shows earnings for the year of \$75,871, which with the balance brought forward from the previous year of \$34,777, made a total of \$110,648. Of this amount, \$30,000 was used for bond interest, and \$10,000 transferred to depreciation reserve, a balance of \$70,648 being carried forward.

The directors, in their report, state that they hope conditions will permit the payment of the 2 per cent dividend on capital stock on July 2 next, and at the same rate half yearly hereafter.

The balance sheet shows \$97,376 of raw and manufactured material on hand, accounts and bills receivable of \$124,000 and \$19,000 of cash, these items being against \$32,701 of current liabilities. The annual meeting will be held on May 19.

GERMANS USE PAPER BEDS.

Paper beds, with paper sheets and paper pillow cases, are now being used in Germany by the poor. The material for mattresses and bedding has become so dear that it is impossible for any but the comparatively rich to afford them.

The mattresses are now made of strong sheets of paper pasted together and filled with dried leaves of beech and oak trees. These leaf mattresses are said to be as comfortable to lie on as any filled with feathers.

The paper used is toughened by a special process, which prevents tearing easily. The leaves for filling the mattresses and pillow cases have been collected in the great German forests by bands of children at a practically negligible cost.

UNITED STATES ENVELOPE.

The United States Envelope has been obliged to advance prices of its products very sharply on account of an increase in the cost of paper of 35 per cent. The company buys the bulk of its paper material from the American Writing Paper, which has advanced prices 30 per cent to 50 per cent, according to grade.

Gross sales by the United States Envelope have shown a very even course from year to year. When times are good, more bills are sent out by its customers; when poor, more chasers. Use of envelopes in the two processes runs remarkably steady.

DIAMOND MATCH CO.

A director of Diamond Match, which recently increased the quarterly dividend from 1½ to 1¾ per cent, says: "With potash price up 1,000 per cent, and other ingredients also away up, we decided on a conservative dividend policy, although we have nearly \$2,000,000 cash, and this year's earnings are much better than last year, with equally good ratio of net to gross. Our potash experiments are gratifying."

INTERNATIONAL PAPER CO.

Press reports of a week ago carry the story that the International Paper will expend \$1,500,000 at Berlin, N.H., in building a new mill and enlarging its property at that point.

It is now stated that this story is absolutely without foundation. International Paper is not contemplating the erection of any new mill. Such property expenditures as it is making are designed to improve the efficiency and lower the cost of production at its already well-established mills.

UNITED STATES NOTES

(Special to the Pulp and Paper Magazine.)

The employes of the Haverhill Box Board Company, Haverhill, Mass., who went on a strike several weeks ago, have returned to work, and the mill has resumed operations in all departments. The employes accepted the increase in wages offered by the company. The men made a demand for eight hours per day and 25 cents per hour. This demand was refused by the company, and the men, with the exception of the machine tenders, went on strike. The mill was obliged to suspend operations on two machines. The settlement of the strike was made by the waiving of the eight-hour demand, and by increasing the wages three cents per hour to men in the beater room and two cents per hour to men in the machine rooms, the hours to remain the same.

* * *

The employes of the Falulah Paper Company, of Fitchburg, Mass., were notified during the past fortnight of a 10 per cent increase in pay. This was a voluntary move on the part of the company, as no demand had been made upon them by their employes for this increase. About 500 are affected by this action. The mills of the Falulah Paper Company have operated on the three-four system since the first of the year.

* * *

Charles T. Andrews, of John A. Andrews and Co., Penn Van Yan, New York, as president; J. A. Koons, of Scranton, Pa., as treasurer, and Charles Marvin, of Elmira, N.Y., as secretary, have applied for a Pennsylvania charter, with capital of \$10,000, to manufacture wrapping paper and to sell paper and kindred lines. The headquarters of the company will be at Huntington Mills, Pa. The new company will be ready for business June 1.

* * *

The latest of the Wisconsin Paper companies to put their plants on the eight-hour shift system is the Rhinelander Pulp and Paper Company, of Rhinelander, Wis. The change in that plant will necessitate the addition of about 50 men to the payroll. Practically every paper mill in the State is now under the new system, and most of the pulp mills have also adopted it.

* * *

Robert Carr, in charge of the wood department of the Arrowhead Mills at Fulton, N.Y., has returned from Ontario and Quebec after closing contracts for his pulp wood supply. Contracts have already been closed for 10,000 cords of wood, and partial shipment has been made. Early shipments by rail are due to arrive at the mill very soon. Most of the wood supply for the plant will be shipped by boat from Canadian points direct to the mill, coming via the Oswego branch of the New York State barge canal from Oswego. A large saving in the expense of handling this material will be effected by the all-water route, as the cost of loading from boats to cars at Oswego, as was formerly done, will be eliminated.

Announcement was made at Holyoke, Mass., during the past fortnight, that B. F. Perkins and Son, Inc., The Whitmore Manufacturing Company and the Holyoke Water Power Company, would allow their employes to attend the military training camp at Plattsburg, N.Y., this summer. All three firms have agreed to pay their employes their regular salary while training at the camps.

* * *

About 60 unorganized employes of the Chemical Paper Manufacturing Co. of Holyoke, are on strike. All had been given wage advances recently. Urged, it is thought, by agents of the I. W. W., they demanded further advances, and left their jobs during the past fortnight, without giving the management a chance to consider the new demands. The operation of the mill is somewhat crippled by the strike.

* * *

The Granby Pulp and Paper Co., Fulton, N.Y., has purchased a tract of land adjoining its property on the north, and presented it to the Fulton High School to be used as an athletic field. The company has already begun the work of preparing a baseball diamond for immediate use.

* * *

The Franklin Paper Company, of Holyoke, Mass., manufacturers of white and colored Bristol board, has awarded a contract for the construction of a 50 x 50 feet addition to the boiler home. The addition will be one-story in height, brick, and work on same will be started at once. The cost of the new building will be about \$5,000.

* * *

Workmen are now busy laying the foundation for the new mill of the Riverview Coated Paper Company at Kalamazoo, Mich. The location of the mill is on a piece of land which will need considerable filling in order to raise the floor of the building up above the high water level of the Kalamazoo River. Rapid progress is being made with the work, notwithstanding the fact that the contractors are having considerable difficulty in getting all of the men needed.

* * *

The Savage Manufacturing Company of Skowhegan, Me., whose paper mill was burned several months ago, will shortly commence the building on the same site. The structure will have a concrete foundation, with brick superstructure two stories high. There will be 31,000 square feet of floor space in the building, including the basement.

* * *

While the Eastern Manufacturing Company of Bangor, Me., plans to spend \$10,000 or \$15,000 on the finishing room of its paper mill at South Brewer, there is no intention of building a \$100,000 addition to this department, as published. Vice-President Fred R. Ayer said in regard to this: "The Eastern Manufacturing Company, as does every large concern, has mapped out a tentative policy of enlargement for future years, and

naturally the finishing room has come in for its share of attention, but beyond the expenditure stated above, none of these plans will be carried out in the immediate or near future.

* * *

A report from Dayton, Ohio, says that an early decision is expected in regard to the site of a new straw paper mill to be built either at Dryden or Coshocton. The new company is to be capitalized at \$150,000, and is backed by P. C. Shipps, Dr. E. U. Marquard, L. P. Gallagher, M. D. Custe, A. S. Rippeth, C. L. Barnes, R. N. Barnes, I. D. Colen and Geo. M. Gray. The promoters expect to erect modern brick buildings with concrete floors. The plant is to have a daily capacity of from 25 to 30 tons, employing about 60 men. The company that will control the property is the owner of the board mill of the Fairfield Paper Company at Baltimore, Fairfield County, and it is said that the manager of the new plant is a man who has been at the head of the big mill at Rockford, Ill.

CORRESPONDENCE.

To the Editor of The Pulp and Paper Magazine:

Dear Sir,—In your last issue, reference is made to the matter of Fourdrinier Wires. With regard to the acute, and, as we believe, temporary situation, that has arisen, there are three points that should be borne in mind.

First.—At this time of the year, owing in many cases to an excess of sand in the water, the life of wires is below normal, and consequently more wires are being used. Within the next few weeks, this adverse condition will disappear.

Second.—Paper making machines, both in Canada and the United States, owing to the phenomenal demand for paper, are working just now at practically 100 per cent efficiency. Although we may hope to the contrary, it is probable that this demand will ease up, as the summer advances.

Third.—The shortage of material for wire weaving, caused mainly by the war demand for copper, has been accentuated by labour troubles and freight congestion at one of the principal sources of supply. We understand that normal conditions have now been restored.

From the foregoing considerations, it will be seen that whilst the consumption of Fourdrinier Wires has been at the highest point, the production has been curtailed during the last few months. Our opinion is that the situation will improve from now on, especially when the greatly increased production on the part, we believe, of all wire weaving establishments comes fully onto the market.

So far as Canadian wire weaving works are concerned, we believe we can state confidently that any temptation to handle export business has been resisted, in order that the home mills may be cared for, also, that only a fair price has been charged, when the enormous increase in the cost of the raw material, and other market conditions, are taken into consideration.

Yours truly,
pro. C. H. JOHNSON & SONS, LTD.,
CHAS. JOHNSON.

Montreal, May 8th.

Ottawa Notes

Ottawa, May 10.

Pulp and paper manufacturers in the Ottawa district who in the past have suffered at various times from low water, are now suffering because the water is so high. The height reached by the Ottawa, Gatineau and other local streams is unprecedented, and promises to break all records for the past fifteen years. Already the E. B. Eddy Company's wharves have been flooded, and work at the J. R. Booth pulp and paper plant is also being interfered with.

According to Mr. Jackson Booth, a portion of the plant may have to close down altogether. What is feared is that the level the water has now reached will be accentuated when the "north water" makes its annual advent, and that the waterwheels of the different plants at the Chaudiere will be so submerged as to mean a cutting off of power.

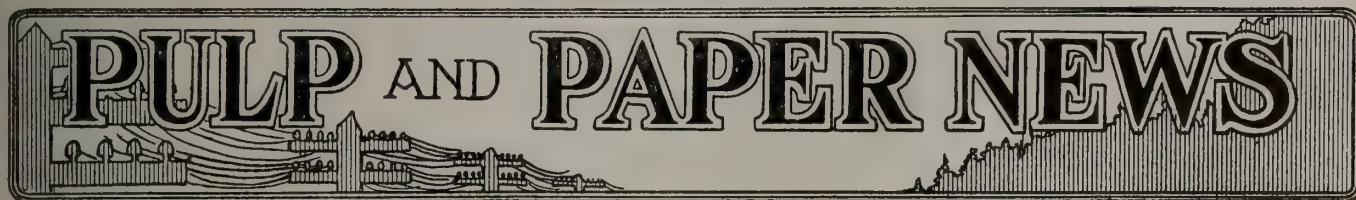
The Supreme Court last week gave judgment in a case of considerable interest to the pulp and paper trade, and which involves very large sums. This is the appeal of E. J. Rainboth, of Ottawa, from the judgment of the Court of King's Bench of Quebec, which had dismissed his action against Mr. M. J. O'Brien, of Renfrew. Rainboth claims a one-quarter interest in certain valuable limits on the Upper Ottawa. Mr. O'Brien, however, refused to admit that Rainboth had any claim at all to the timber. When the case was taken to the Superior Court of Bryson district in 1914, Mr. Rainboth's action was maintained, and Mr. O'Brien was ordered to give him a quarter of the limits, or \$500,000. This decision was reversed by the Court of Review, and in such judgment the Court of King's Bench concurred. Now the Supreme Court has set its seal on the action.

Although Parliament has not dealt with any subjects directly affecting the pulp and paper trade, a number of railway matters touched on during the past week will affect the industry in an indirect way to a considerable extent. It was announced, for instance, that the Government is to take over the Quebec and Saguenay Railway, and also the Lotbiniere and Megantic road on the other side of the St. Lawrence. According to statements made by the Hon. Dr. Reid, Acting Minister of Railways, in the House last week, there is considerable pulpwood along the line of the road, and a district will be opened up, part of which has hitherto been almost totally lacking in such facilities. Another announcement of interest was the granting of a Government subsidy to the St. John Valley Railway. This includes a branch to be built from Andover to connect with the Maine Central Railway in the United States. It will tap a rich pulpwood territory, and afford a facility greatly needed for both the pulp and paper and lumbering industries of New Brunswick, according to Hon. J. D. Hazen, Minister of Marine.

U. S. GOVERNMENT LARGEST PAPER BUYER.

More than 30,000,000 pounds of paper, embracing almost every kind in present-day use and costing approximately \$1,250,000 a year, is used in the government printing office, making the United States one of the largest buyers of paper in the world.

PULP AND PAPER NEWS



A charter has been granted to the Corrugated Paper Box Co., Limited, of Toronto, with a share capital of two hundred thousand dollars. The company is empowered to take over the plant, property and assets of the Corrugated Paper Co., Limited, 187 Geary Ave., Toronto, and to manufacture, deal in and sell paper, corrugated paper and paper boxes of every kind.

The Methodist Book and Publishing House, Toronto, have closed their old book store at 29 Richmond St. West, and all the stock has been removed to the new book room at the corner of Queen and John Streets.

The wedding was celebrated recently at Homewood Ave., Toronto, of Miss Doris Louise Huestis, second daughter of A. M. Huestis, the widely known paper mills representative, to Jesse S. Mills, of Toronto, the ceremony being performed by Rev. Dr. F. S. Huestis.

Clarence G. Morrison, superintendent of the Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, Que., has returned after spending a couple of weeks holidays at Atlantic City.

The wedding took place in Rosedale Presbyterian Church, Toronto, recently, of R. Cecil Kilgour, son of Robert Kilgour, Toronto, President of the Trent River Paper Co., Frankford, Ont., to Miss Ruth Rutherford, daughter of Henry B. Jackman, Toronto.

John Dickinson and Co., Limited, have removed to their new premises in Montreal at 88 Grey Nun Street.

An injunction has been granted the United States Playing Card Co., against A. O. Hurst, agent for an English company in Toronto, restraining the latter from copying too closely the designs which the United States Playing Card Co. have made popular by spending one hundred and fifty thousand dollars in one year in advertising two brands of their cards.

Gerrard Noble, manager for the wholesale department of Newsome and Gilbert, Limited, manufacturing stationers, Toronto, died recently after only a week's illness, in Wellesley Hospital, Toronto. He was forty years of age.

The Powell River Co., Powell River, B.C., are exceptionally busy, and are shipping large quantities of newsprint to Australia and New Zealand.

J. F. MacKay, business manager of the Toronto Globe, and a former President of the Canadian Press Association, was elected a director of the American Newspaper Publishers Association, at the annual meeting held recently in New York City.

The plant of the Stovel Co., Winnipeg, one of the largest job printing and engraving houses in Canada, was destroyed by fire on May 2. The loss on plant and supplies was about \$350,000, which is only partially covered by insurance.

The plant of the Toronto Paper Mfg. Co., Cornwall, Ont., which was closed down for three weeks while repairs were made to the Cornwall Canal, has resumed operations. The mill received a thorough overhauling, and is now rushed with orders.

The Martin Corrugated Paper and Box Co., Limited, Toronto, whose plant was destroyed by fire on Christmas day last, and who have been carrying on operations in temporary premises, are building a new brick factory on Pape Ave., which will cost sixteen thousand dollars.

A. A. McDiarmid, chief engineer of the Mattagami Pulp and Paper Co., Toronto, attended the annual technical meeting of the American Pulp and Paper Association in Kalamazoo, Mich., on May 10, 11 and 12.

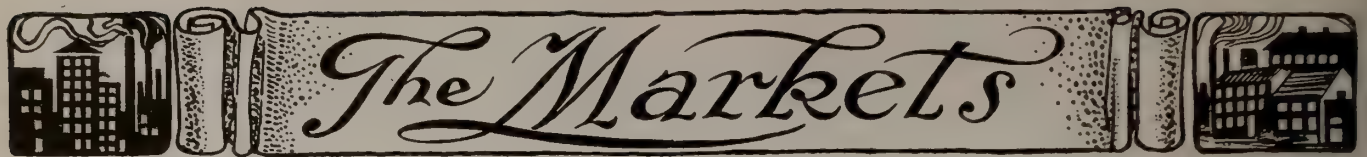
The Mattagami Pulp and Paper Co. have engaged R. O. Swezey, forestry engineer, to install on their limits the latest fire ranging system, and the best methods of conservation. A. G. McIntyre, General Manager of the Company, has had prepared a miniature map showing the exact location of the plant and town and the properties of the company. The company have timber limits on the Mattagami River, Ontario Government concession, of 846 square miles, and 125 square miles, freehold land, and of water powers they possess at Smooth Rock Falls, 12,000 horse power, and at Yellow Falls, 10,000 horse power. The pulp mill, for which the plans are practically completed, will have an annual capacity of 22,500 tons of bleached sulphite fibre, and the saw mill will have a capacity of 4,000,000 feet a year.

The many friends of Dr. J. S. Bates, superintendent of the Canadian Wood Products Laboratories, Montreal, are congratulating him on his recent marriage to Miss Jeanette Ingraham, of North Sydney, C.B., the ceremony taking place in New York City.

Mr. Barkwell, of Barkwell, Phillips Co., Winnipeg and a former manager of the Winnipeg branch of McFarlane, Son, and Hodgson, Montreal, spent a few days in the East last week on business.

Fire recently destroyed the drying kiln and shipping shed of the British Columbia Sulphite Fibre Co., at Mill Creek, B.C., the loss being forty thousand dollars.

A. G. Pounsford, late of Canton, North Carolina, who has been appointed Safety Engineer for the Ontario Pulp and Paper Makers Safety Association, has arrived in Toronto and opened an office in the Bell Telephone building. Last week Mr. Pounsford met the members of the Board, of which S. B. Gundy is chairman, and the plans of the work and the precautions to be taken to safeguard employees against accident were thoroughly gone into, and many preliminary matters attended to. Mr. Pounsford comes highly recommended as an experienced and thoroughly practical man in his line, and has already created a good impression. He is paying a visit to several mills in the eastern part of the province, after which he will visit those in western Ontario, getting acquainted with the managers and the equipment. It is expected that the work of the association will be largely educative, and much will be done along the line of instructing employees on how to avoid mishaps.



The Markets

CANADIAN MARKETS

There is no let up in the number of orders, and the mills are all rushed to their utmost capacity, while increases in prices in practically all lines of paper come thick and fast. Some large wholesale houses are complaining bitterly of their inability to get supplies, and their orders have been cut down in many instances by a considerable percentage owing to the plants being up against the raw stock proposition as keenly as ever, and no hope held out for any alleviation.

Newsprint continues to strengthen in price, and there has been an advance of three to five dollars per ton on renewal contracts, while in the open market fancy figures are heard for the supply of a few hundred tons. The best evidence of the great strides that Canada has made in the paper production line, more particularly in news, are the figures furnished with respect to the export trade, which for the last fiscal year are likely to reach eighteen million dollars, which is seven times what they were five years ago. In February last the returns show that there was exported \$1,752,710 worth of news print, which constitutes the largest month on record except November last, when the figure touched \$1,753,013. During the fiscal year of 1914-15 there was exported in news print \$14,091,662, and for eleven months of the last fiscal year the aggregate is \$15,020,405, with the month of March yet to be heard from.

Owing to so much chemical and mechanical pulp being used by our own mills the figures for export do not show any great advances. In 1914-15 there was exported \$4,806,622, while for the eleven months of the last fiscal year the exports reached \$5,053,180. In February the exports were \$654,839. In ground wood pulp there was exported in 1914-15 \$4,459,539, and for the first eleven months of the last fiscal year \$3,326,914.

It is expected that the coming summer will be one of the busiest that Canadian mills have ever known, and, should business on the part of the jobbers slacken off, they have orders ahead which will keep them many weeks to fill. All plants continue to take on business at the prices current at the time of shipment. Book and writing mills are still up against it in matter of raw stock. An important move has been made by the Provincial Paper Mills Co., who have started the three tour system at the Montrose plant in Thorold, and will follow with the three shift arrangement at Mille Roches and Georgetown as soon as the required extra hands can be obtained. All the book and writing plants on the other side of the line are adopting the three tour plan, and the Canadian Company believe that if they do not do likewise they will have difficulty in holding some of their best men. The labor problem is very acute and paper makers and machine tenders are in more active requisition than they have ever been in the history of Canada, owing to so many men enlisting. The three tour system has been in effect in all the large news print mills of the Dominion for some time.

It is noticeable that Canadian publishers are beginning to cut down the number of pages in their papers. There are not nearly so many special editions, while a number of features have been eliminated and reports of the war, unless very important, are condensed.

In the pulp market there has been a more marked demand for ground wood and available supplies are not so numerous, while better prices are being obtained. In the sulphite arena domestic bleached is being quoted at seven cents, while easy bleaching is commanding three and a half cents, and even more. It has been thought that the open navigation season would afford some relief from Scandinavia, but little hope is now held out by importers as the prevailing prices abroad are in excess of those at home, and the demand just as keen.

Board of all kind continues stiff in price and there have been increases during the past few days on the better grades. There has been an advance on several lines of special papers, while drug papers have jumped in quotations and greaseproof and glassine have taken another mount up. Jobbers report that spring business has so far been away ahead of last year, and, notwithstanding they are up against it in the matter of sufficient supplies in certain lines, they feel that there will be no falling off in trade. Printers are busy in most centres, and, as stocks are low, many houses have been buying heavily of late.

Kraft prices have advanced another cent, and the new lists issued show that the quotations on machine finish kraft, in any quantity or car load lots, 7 cents, and for machine glazed kraft, seven and a half cents. To consumers the mills are quoting, in ton lots and over, seven and a half cents for machine finish, and eight cents for machine glazed. In half ton lots and less than one ton, seven and three-quarter cents for machine finish, and eight and a quarter for machine glazed; less than one half ton, eight cents for machine finish, and eight and a half for machine glazed. Light weights, 24 x 26—30 pounds, and heavy weights, 24 x —63100 lbs., ten per cent extra.

Coated paper have also gone up another half cent, making the third advance in the past few weeks, while there has been another ascension in wrappings of about ten per cent on the average. The following prices are now quoted by the mills—Grey, browns, cars, \$3.15; one ton and upwards, \$3.40; less than one ton, \$3.65; "B" Manila, car, \$3.75; one ton and upwards, \$4.00; less than one ton, \$4.35; No. 2 Manila, for present stocks only, \$4.00; fibre kraft, cars, \$4.75; one ton and upwards, \$5.10; less than one ton, \$5.50; extra strong Minilas and fibres, cars, \$5.00; one ton and upwards, \$5.35; less than one ton, \$5.75.

The following prices prevail, f.o.b., Toronto:

Paper.

News (rolls), \$2.25 up, at mill, in carload lots.
 News (sheets), \$2.50 up, at mill, in carload lots.
 Book papers (carload), No. 3, 5.50c.
 Book papers (ton lots), No. 3, 5.50c to 6.25c.
 Book papers (carload), No. 2, 6.00c to 6.50c.
 Book papers (carload), No. 1, 6.50c to 7.00c.
 Book papers (ton lots), No. 1, 6.50c to 7.00c.

Sulphite bonds, 6½c to 8c.
 Writings, 6c up.
 Grey Browns, \$3.25 to \$4.50.
 Fibre, \$5.00 to \$6.00.
 Manila No. 1, \$5.00 to \$6.00.
 Manila No. 2, \$4.25 to \$4.75.
 Manila, B., \$4.00 to \$4.50.
 Unglazed Kraft, \$7.50 to \$9.00.
 Glazed Kraft, \$8.00 to \$9.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, unbleached, 75c to 1.00c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.
 Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 50c, 10 discount.
 Paper bags, kraft, 40 discount.
 Confectionery bags, 33 1-3 discount.

Pulp.

Ground wod, \$22 to \$26.
 Ground woodpulp (at mill), \$17 to \$19.
 Easy Bleaching Sulphite, \$70 to \$72.
 Sulphite, news grade, \$68 up, delivered.
 Sulphite (bleached), delivered, \$125 up.
 Sulphate, delivered, \$75 up.

Quotations, f.o.b. Montreal, are as follows:—

Book—News—Writing and Posters.

Roll News, \$41 to \$45 per ton for large orders; \$50 to \$60 per ton for small orders.
 Ream News, \$50 to \$55 per ton for large orders; \$56 to \$60 per ton for small orders.
 No. 1 Book, 6.85 to 7.60.
 No. 2 Book, S.C., 6.10 in large quantities; 7.10 in small quantities.
 No. 3 Book, M.F., 5.10 in large quantities; 6.10 in small quantities.
 Writings, 6.40 to 8½.
 Writing Manila, 6.40.
 Cover Papers, 7½ to 11c per lb., according to colors wanted.
 Colored Poster, 6½ to 7½.

An extra charge of 10 per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
White Wrap, Cleaver, 100 lbs. . .	3.15	3.40	3.65
Beaver, Brown wrap 100 lbs. . . .	3.75	4.00	4.35
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	4.75	5.10	5.50
No. 1 Manila, Invincible Fibre,			
100 lbs.	5.00	5.35	5.75
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			

Here is the latest price list which has been issued by a leading mill, which shows how wrapping papers and kraft are soaring. It is predicted that by the early summer kraft will be selling at ten cents a pound, as foreign imports have been excluded and Canadian plants have the field pretty much to themselves. Kraft pulp is constantly ascending in price, and is now quoted around \$85 a ton.

	Jobbers.	Mill Orders.	Stock.
Grey	\$3.25	\$3.50	\$3.75
Dia. Manila	3.75	4.00	4.25
No. 1 Manila	5.00	5.35	5.75
Env. Manila	5.00	5.35	5.75
Fibre (Under D.D. 40)	5.00	5.25	5.75
Fibre (Over D.D 100).	5.25	5.75	6.00
Kraft	8.00	8.50	9.00
Tag	4.50	4.75	5.00

Owing to the action of the Department of Trade and Commerce urging Canadian householders to save waste paper and rags, there has been quite an accumulation. Mills now say that there is a great deal more stock in sight and rag and paper dealers are handling larger quantities, but are of the opinion that the mills are hanging back and not getting as much as they would like. The demand for cottons and roofing stock has fallen off with a natural decrease in price. Folded news and over issues are weaker, and there has been a drop in mixed papers. White cuttings and kraft are in very good requisition.

Paper Stock.

No. 1 hard shavings, \$3.25.
 No. 1 soft white shavings, \$2.75.
 No. 1 mixed shavings, 55c.
 White blanks, \$1.05.
 Heavy ledger stock, \$2.25.
 No. 2 book stock, \$1.00.
 No. 1 book stock, \$1.50.
 No. 1 Manila envelope cuttings, \$1.60.
 No. 1 print Manilas, \$1.50.
 Folded news, 70c.
 Over issues, 70c.
 No. 1 clean mixed paper, 50c.
 Old white cotton, \$4.50.
 Thirds and blues, \$2.75.
 No. 1 white shirt cuttings, \$7.25.
 Black overall cuttings, \$2.00.
 New light flannelettes, \$5.25.
 Ordinary satinets, \$2.00.
 Flock, \$2.00.
 Tailor Rags, \$1.85.

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine.)

New York, N.Y., May 12, 1916.

Condition governing the ground wood pulp market are much better now than they have been at any time during the past six or seven years. The market has been constantly growing stronger, with prices advancing in proportion. Up to the present time, sales of ground wood have been reported at as high as \$10 per ton, f.o.b., pulp mill. The prospects for the summer are that prices will be higher than have ever before been witnessed. Aside from the fact that the news mills are running as close to maximum capacity as is possible, a great many other manufacturers will find it necessary to increase their consumption of ground wood, because of the scarcity of chemical pulp. At the present time, the grinders throughout the country are operating at full capacity, with considerable product sold ahead. Pulp wood has advanced from \$2 to \$3 a ton, and is likely to go still higher, which must have some appreciable effect on the ground wood market. Should the consumer be a dry one, the production of ground wood pulp will necessarily be curtailed because many machines will have to be shut down from

time to time. Such an occurrence at a time when the demand is very great, is expected to force prices very high.

Chemical pulp is very strong, and likely to grow stronger. Buying in the market has eased up somewhat, because of the approach to open water on the Baltic Sea. Many mills expect that the opening of navigation will bring large shipments of chemical pulp to our ports—in fact, one mill is known to have written to an importer, refusing to buy at the present high price, and predicting that by the middle of May, the market would be much lower, and that there would be plenty of Swedish pulp available in this country. In previous years, there has always been somewhat of an influx of stock into the United States, after the Baltic Sea became navigable. This year, however, despite the expectancy of the various paper manufacturers, the importers declare it their firm belief that comparatively little pulp will be forthcoming. They point to advices showing to what extent Scandinavian pulp producers have been handicapped in their work. A number of the mills have been operating irregularly, owing to the difficulty in getting certain raw materials. Coal has been hard to obtain. The foreigners have been compelled to use German coal, which is not as effective as British coal, to which they have been accustomed. Sulphur, of course, has been another source of trouble. A rumor is heard of sulphur shipped from this country and being landed in Sweden at a cost of \$73 a ton. The normal price, when purchased from Sicily, was about \$23 a ton. Facing these conditions, and not knowing whether or not they would be able to get prices high enough to compensate for the greatly increased cost of manufacture, it is believed that the Swedish stores are much less than usual. The shortage of shipping facilities will also prove quite an obstacle to overcome in shipping supplies of pulp to this country.

Importers look for high prices to continue. They feel that the shortage of pulp will become more acute than it has been. While there are many projects under way in the United States and Canada, for the increasing of the pulp production, few of these will mature soon enough to be of any real benefit in the near future. Domestic manufacturers have little pulp to offer. The fact is that unless premiums on top of the market price are paid, it is well nigh impossible to obtain stock. Bleached sulphite has been sold as high as 7½c, although the market may be considered at about 7c. Available supplies are very scarce. Easy bleaching is in fair demand, though hard to obtain, with quotations at about 4½c. Unbleached sulphite cannot be had for much less than 4c. Famine conditions in kraft continue. Very little stock is to be had, and quotations are nominal at about 4¾c. Soda pulp is almost out of the markets.

The rag market is very unsettled. According to reports received from the various dealers about the city, the mills are not buying, with the intention of forcing the market to a very low level. Thus far, these attempts have been successful, for prices are much lower than they were a few weeks ago, but comparatively little stock can be had at these very low prices. The fact is that but a few of the smaller concerns—those in need of ready cash—are disposing of rags at low figures. Among the larger concerns, the tendency is to hold firm for good figures. These men claim to have studied the situation carefully and have concluded that the scarcity of rags still existed and it was only a mat-

ter of a short time before it would once more make itself felt. They claim that it is only natural for many of the mills to feel that the crisis was over, for there is now a temporary easing. This is due chiefly to the freer railroad traffic which has enabled the release of many cars of stock, which have been held during the congestion. However, with all of the mills running at maximum capacity, and most of them with enough orders on their books to keep them operating for several months ahead, it seems logical to believe that the buying movement must start soon.

The rag men believe that when the movement does start, prices may go even higher than they were before. There is an apparent scarcity of new cuttings, which may be aggravated by the present strike among the cloak and suit makers. However, prices are only at about 9c. to 10c. Old whites, No. 1, are holding fairly well at about 5½c. Thirds and blues are selling at about 3½c, while black stockings can be had at 4c. Roofing stock ranges from .50c. to 17½c. There is little foreign stock coming in, and prices on these are practically all nominal.

Bagging has been holding up fairly well, despite the fact that considerable interest has been lacking. Gunny is holding at about 3¾c, bright bagging can be had at 3¾c, sound bagging at 3c, and mixed bagging at 2¾c. Manila rope is selling at about 5c to 5½c. Rumors are afloat that England is preparing to place an embargo on all old bagging and Manila rope. If such an action should take place, it would immediately force the market up, for England has been our chief source of supply for these materials.

Old waste papers have suffered considerably during the past few weeks. The mills manifested a disinterest in stock, and refused to buy unless the quotation was very low. The Western mills were very exacting, more so than the Eastern manufacturers. As a result of this attitude mixed papers were severely affected, and dropped from a price of almost one cent a pound to fifty cents per hundred pounds. Strictly over issue is now at about 75c, while strictly folded can be had at 60c to 70c. The other grades have not been affected so sharply. Hard white shavings are held at 3¼c to 3½c, and soft white shavings are selling at 3c. It is believed that these grades will strengthen soon, because of the shortage of rags and sulphite. Magazines are quoted at about 2c, while ledger stock is current at 2.25c to 2.35c. Krafts are rather scarce at 2½c to 2¾c. The prospects are that this grade will commence to soar soon. Reports have it that a number of packers are storing old krafts.

The paper market is a bit quiet in that the volume of new business has fallen off a bit. However, this has not affected conditions generally for the mills continue to operate at full capacity, most of them three and four months behind in orders. The freight congestion has relieved the situation temporarily, for considerable stock which was held en route has now made its way to the points of distribution and consumption. The jobbers are resenting the high prices and are not ordering as freely as before. The mills are rushing at maximum capacity and are actually shipping over 100 per cent of production. The demand is unusually great, and the customary warehouse stocks seem to have disappeared entirely. Matters are expected to ease considerably because the newspapers are taking measures to reduce the consumption of white paper. Krafts are nominal. There is little to be had, and the value of stock depends upon how urgently it is wanted. Sales

have been recorded at 10½c. All wrappings, including Manilas and fibres, are in good demand at high figures. Tissues are firm. Present prices are about 95c for a pure white sulphite tissue, and about 75c for a Manila tissue. Book papers remain high, and orders are not being encouraged by the mills. Boards are quiet at the present time, but the manufacturers are busy taking care of old orders.

The following quotations are purely nominal:—

Pulp.

Ground Wood, No. 1, \$24 to \$25, delivered.
Ground Wood, No. 2, \$20 to \$24 delivered.
Unbleached Sulphite, dom., 3.35c, delivered.
Easy bleaching impt., 4.10 to 4.40c, ex-dock, N.Y.

Paper.

News (rolls), \$2.10 up, at mill, in carload lots.
News (sheets), \$2.30 up, at mill, in carload lots.
Book papers (carload), No. 3, 5.50c.
Book papers (ton lots), No. 3, 5.50c to 6.25c.
Book papers (carload), No. 2, 6.00c to 6.50c.
Book papers (ton lots), No. 2, 6.50c up.
Book papers (carload), No. 1, 6.50c to 7.00c.
Book papers (ton lots), No. 1, 6.75c up.
Sulphite bonds, 6½ to 8c.

Writings, 6c. up.

Grey Browns, \$2.85 to \$3.50.

Fibre, \$4.50 to \$5.50.

Manila No. 1, \$4.50 to \$5.50.

Manila, No. 2, \$3.75 to \$4.50.

Manila, B., \$3.35 to \$4.00.

Unglazed Kraft, \$6.25 to \$8.25.

Glazed Kraft, \$7.00 to \$9.00.

Tissues, bleached, 90c to 1.50c.

Tissues, unbleached, 65c to 1.00c.

Natural greaseproof, 10c to 14c.

Bleached greaseproof, 15c to 20c.

Drug papers, whites and tints, 7c to 9c.

Paper bags, Manila, 50, 10 discount.

Paper bags, kraft, 40 discount.

Confectionery bags, 33 1-3 discount.

Pulp.

Ground wood pulp (at mill), \$17 to \$19.

Ground wood, \$20 to \$25, delivered.

Easy Bleaching Sulphite, \$70, del.

Sulphite, news grade, \$66 up, delivered.

Sulphite (bleached), delivered, \$1.15 up.

Sulphate, delivered, \$75 up.

NEWS PRINT MANUFACTURERS PROTEST.

Declaring that they have been misrepresented, the News Print Manufacturers Association has petitioned the Federal Trade Commission for a speedy investigation into increases in price of paper in the United States. The petition declares 85 per cent of newsprint manufactured in the United States is sold on annual contracts, prices of which have not increased more than 1 per cent during the past year, while prices of book and wrapping papers have increased approximately 100 per cent.

UNITED STATES CAPITAL FOR CANADA

Establishment at Ocean Falls, B.C., by the Fleishacker and Johnson interests of California, of a \$2,500,000 paper mill as an addition to the pulp mill already operating there is announced by Mr. Louis Bloch, of San Francisco, vice-president and general manager of the Crown Willamette Paper Company. The Company Mr. Bloch represents is one of a number operated by the California interests.

TRADE NOTES

Richard Southam of the Southam Press, Limited, Toronto, was re-elected President of the National Club, Toronto, at the annual meeting held last week and W. P. Gundy, Vice-Pres. and Managing Director of W. J. Gage and Co., Toronto and the Kinleith paper Mills St. Catharines was re-elected one of the directors.

John Hewitt, Jr, formerly of Toronto, now of the head office of Price Bros and Co., Quebec, was in Toronto last week on business. He is attending to the wants of the trade in Ontario in connection with the Jonquière plant of the company.

The pupils of the Technical School in Hamilton listened to an instructive address recently by F. R. Close on Paper and Paper Making. Mr. Close is chairman of the Technical Committee of the Board of Education, Hamilton.

Improvements have been made to the plant of the Kinleith Paper Co. at St. Catharines. A new building has been erected in which two additional one hundred thousand pound beaters have been installed while the filtering plant of the mill has been doubled in capacity. Another important move is that on May 1st the three tour system was put in operation.

Six employees of the Don Valley Paper Co., Limited, Toronto, have joined the colors. They are E. Flannigan, L. Flannigan, S. Hope, Harry Hide, W. Sherriffe and Joseph Rayner. The last three have been killed in action.

"The Levi's," who are large dealers in waste paper on John St., Toronto, have increased the capacity of their warehouse and yard by taking in the premises next door.

E. G. R. Clarke, representative of the National Paper Co., Valleyfield, Que., has returned to Toronto after spending two weeks at various points in Quebec.

WHY PAPER IS COATED.

In reply to an inquiry as to why paper is coated for taking half-tone illustrations, the following answer has been given: "The reason that paper is coated is to produce a sheet with a surface that is absolutely smooth or plane, and coated paper comes the nearest to it of anything yet produced in the manufacture of paper. The object of producing a paper with an absolutely smooth surface is for the better printing of half-tone illustrations. A half-tone plate is a smooth copper plate with an image obtained by photographic means, etched into its surface. This plate is covered with a thin layer of ink, and it will be seen that the ink lies in varying degrees of density according to the high lights and shadows of the photograph, and if this inked plate is pressed against a surface which is not absolutely smooth the result will be very satisfactory. A photomicrograph view of the surface of an ordinary machine-finished paper gives it an appearance of being made up of hills and valleys, which is really true. So it will be seen that a fine half-tone plate cannot print evenly on such a surface. In coating such a surface the material used fills up the valleys and covers the hill tops, thereby creating a plane surface which is suitable for the half-tone plate."—The Paper Dealer.

PRICE BROTHERS & COMPANY, LIMITED

Report to the Shareholders

FIFTEEN MONTHS ENDED 29th FEBRUARY, 1916

Your Directors have pleasure in submitting the accounts of the Company (and its Subsidiary Companies) for the fifteen months ended 29th February, 1916, duly certified by the Auditors.

The Profits for the fifteen months amount to.....	\$1,032,185.94
Less:—Interest on Bank Loans.....	119,172.50
Showing Profits as per Balance Sheet of.....	913,013.44
FROM WHICH DEDUCT:	
Bond Interest.....	\$362,803.92
Amount of Sinking Fund Requirements for the fifteen months under report.....	156,671.39
	519,475.31
Leaving a Net Balance of.....	393,538.13
To this falls to be added the Balance at the credit of Profit and Loss Account at 30th November, 1914.....	1,010,031.18
Making a total Net Balance to be carried forward of.....	\$1,403,569.31

Experience having proved that the date of closing the accounts in the past, i.e., 30th November, was unsatisfactory owing to the position of operations at that season of the year, it was decided at the last Annual Meeting of the Company to change the date to the last day of February. Owing to this change made in the date for the closing of the Books, the period now under review is one of fifteen months. We would point out to you that during the three months added, December, January and February, no profits accrue in the Lumber Department, but the overhead charges and salaries have to be met, the result being that the Books do not show any increase in net profits for these months, so that the figures shown in the Profit and Loss Account, viz., a profit of practically 8% on common stock, are really less than the result of 12 months operations.

During the period under report there has been charged to Revenue in respect of Repairs & Renewals a sum of \$251,292.83.

Your Directors are satisfied that the Plants are well maintained and in good condition.

An amount equal to the par value of the Bonds redeemed by the operations of the first year's sinking fund has been transferred to General Reserve Fund, which now stands at \$540,000.00.

The result of the operation of the Company's Paper Mill at Kenogami has been most satisfactory, accounting largely for the increase in net profits. The paper made has proved to be of excellent quality and contract renewals are being made at increased prices.

The Ground Wood Pulp Mill at Rimouski was re-opened during the period under report and its operations resulted in profit to the Company.

The Lumber business, while showing profits as heretofore, suffered from lack of shipping facilities, which considerably reduced the turn-over.

The Shipshaw Power Company Bonds have not yet been disposed of.

A number of our employees, mostly from the Kenogami Mills, have enlisted for active service, and we regret to say that two have been reported killed in action and two missing.

On behalf of the Board,

QUEBEC, QUE., 18th April, 1916.

WM. PRICE, President.

AUDITORS' REPORT

To the Shareholders of

3RD APRIL, 1916.

MESSRS. PRICE BROTHERS & COMPANY, LIMITED, QUEBEC.

We beg to report that we have examined the Books and Accounts of Messrs. Price Brothers & Company, Limited (and its Subsidiary Companies) for the fifteen months from 1st December, 1914, to 29th February, 1916.

We have verified the Cash on Hand at Head Office and the various Branch Establishments, and have seen Certificates for the Bank Balances.

The Inventories of Timber, Lumber, Pulpwood, Paper, Supplies, Stores, etc., on hand have been valued at or below cost.

During the period under report there has been charged to Revenue for Repairs and Renewals a sum of \$251,292.83. An amount equal to the first year's Sinking Fund has been transferred from Sinking Fund Reserve to General Depreciation Reserve.

We certify that the Balance Sheet attached hereto is properly drawn up so as to exhibit a true and correct view of the affairs of the Company (and its Subsidiary Companies) at 29th February, 1916.

CREAK, CUSHING & HODGSON; GEORGE A. TOUCHE & CO.—JOINT AUDITORS.

BOARD OF DIRECTORS:

President: SIR WILLIAM PRICE; Vice-Presidents: GEO. H. THOMSON, J. M. MCCARTHY;

I. H. BENN, M.P.; W. S. HOFSTRA; A. J. PRICE; JAMES REDMOND; SIR H. S. HOLT; E. G. PRICE; G. G. STUART, K.C.; H. E. PRICE, Sec.

PRICE BROTHERS & COMPANY, LIMITED

BALANCE SHEET AT 29th FEBRUARY, 1916

ASSETS

FIXED:	
Real Estate, Buildings, Freehold and Leasehold Timber Limits (over 6,000 square miles), Water Powers, Mills and Milling Plant, Warehouses, Craft and Bateaux, etc., at 30th November, 1914.....	\$13,613,608. 10
Additions during period.....	127,881. 52
	<u>\$12,741,489. 62</u>
DEDUCT:	
Property Sales during period.....	12,754. 54
	<u>\$13,728,735. 08</u>
SHIPSHAW POWER COMPANY:	
Expenditure to date on Water Power and Development (including Land, Buildings, Equipment, etc.)..	597,766. 48
	<u>\$14,326,501. 56</u>

CURRENT:

Inventories of Lumber, Ties, Shingles, Laths, Paper, Cardboard, Pulp, Pulpwood, General Merchandise, Moveable Plant, etc., at or below cost.....	\$ 2,026,436. 56
Accounts Receivable.....	453,160. 34
Bills Receivable.....	6,968. 54
Cash in Banks and on Hand.....	<u>38,354. 82</u>
INVESTMENTS.....	2,524,920. 26
DEFERRED CHARGES TO OPERATIONS.....	84,327. 54
	<u>88,123. 19</u>

\$17,023,872. 55

LIABILITIES

SHAREHOLDERS' CAPITAL:	
Authorized and Issued: 50,000 Shares of \$100 each, fully paid.....	\$5,000,000. 00
FIVE PER CENT. FIRST MORTGAGE BONDS:	
Authorized.....	\$6,000,000. 00
Issued.....	\$5,999,529. 34
Deduct: Bonds Redeemed.....	\$160,113. 34
Bonds Pledged.....	<u>34,553. 33</u>
	194,666. 67
	<u>5,804,862. 67</u>
CURRENT LIABILITIES:	
Accounts Payable.....	\$ 420,324. 41
Bills Payable:	
Bank Loans.....	\$953,400. 00
Other.....	<u>41,485. 00</u>
	994,885. 00
	<u>\$1,415,209. 41</u>
Bond Interest Accrued.....	\$ 96,747. 71
Pay Roll Accrued.....	<u>9,908. 90</u>
	106,656. 61
	<u>1,521,866. 02</u>
CONTINGENT ACCOUNTS:	
Reserve against Accounts Receivable.....	\$ 23,715. 22
Reserve against Lumber and Paper Shipments.....	<u>16,506. 12</u>
	40,221. 34
RESERVES:	
General Depreciation.....	540,000. 00
Marine and Fire Insurance.....	50,000. 00
Sinking Fund, First Mortgage Bonds.....	<u>106,671. 39</u>
	696,671. 39
CAPITAL SURPLUS.....	<u>2,556,681. 82</u>

PROFIT AND LOSS ACCOUNT:

Credit Balance at 30th November, 1914.....	\$ 1,010,031. 18
Add: Profit for Fifteen Months to date	\$913,013. 44
Less: Bond Interest and Sinking Fund Requirements for Fifteen Months...	<u>519,475. 31</u>
	393,538. 13
	<u>1,403,569. 31</u>
	<u>\$17,023,872. 55</u>

NOTE: Contingent Liability in respect of Bills under Discount, \$150,639. 00



'AMPHIBIA' Belting has been Made
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The Intelligently Built Waterproof
Leather Belt



Variation of Load in Pulp and Paper Mills *Gives the Severest Belting Tests*

AMPHIBIA

From over forty years experience in the tanning and manufacturing of the best leather belts we have a thorough appreciation of what leather belt in a Pulp and Paper Mill must stand. We unhesitatingly recommend "AMPHIBIA" Leather Belting for Beaters, Jordans, Four-
Fan Pumps, and, in fact, anywhere where pulley conditions are unusual and severe service.

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107-111 Water St.

WINNIPEG

Galt Building

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.

Air Compressors:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Digester Lining:

Advace Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Drainer Bottoms:

Snell, Samuel, Co., Holyoke, Mass.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Que.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Fricion Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

Crookes, Roberts & Co., Sheffield, Eng.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
 Carthage Machine Co., Carthage, N.Y.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Norwood Engineering Co., Cowansville, P.Q.
 Progress Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Fox, Stockell & Co., London, England.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

MILL SUPPLIES---Continued

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Stuff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.
Process Engineers, Ltd., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones & Glassco, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glass, Co., Montreal, P. Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Canada.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada
The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Booth, J. R. Ottawa, Ont.
Bronson Co., Ltd., Ottawa, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Chicoutimi Pulp Co., Chicoutimi, Que.
Davy, James, Thorold, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
MacLaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Pulp Co., Campbellford, Ont.
Ontario Paper Company, Thorold, Ont.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Bathurst Lumber Co., Limited, Bathurst, N.B.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merriton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catherines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth :—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
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Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
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Eddy, The E. B. Co., Ltd., Hull, Que.
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Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A	
Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	63

B	
Backcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6

C	
Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	16
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	62
Churchill & Sim.....	
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D	
Darling Bros, Ltd.....	13
DeCew, J. A.....	64
Dean & Son.....	63
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Dunlop Tire & Rubber Goods Co., Ltd.....	60

E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F	
Farrel Foundry & Machine Co.....	11
J. Ford & Company.....	

G	
Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	65
Glens Falls Machine Works.....	

H	
Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	64
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg. Co.....	14
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6

K	
Klipstein, A. & Co., Ltd.....	7

L	
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	8

M	
Mackinnon, Holmes & Co.....	
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	68
Moore & White Co.....	15

N	
National Paper Co.....	63
Northern Crane Works, Ltd.....	
Norwood Engineering Co. of Can. Ltd.....	13

O	
Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P	
Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R	
Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66

S	
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	62
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Snell, Samuel Co.....	
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T	
Taylor, J. A.....	62
Ticonderoga Machine Works.....	6
Tippet, Arthur P. & Co.....	13

U	
Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

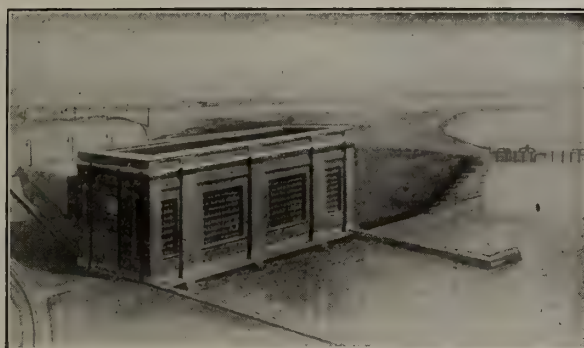
W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	
Westbye, P. P.....	
Wilson-Paterson Co.....	
Winn & Holland.....	
Witting Bros.....	66



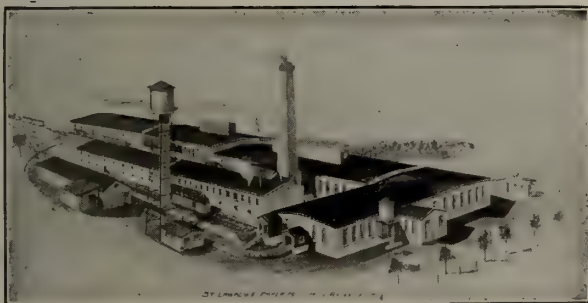
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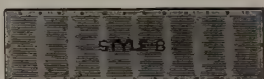
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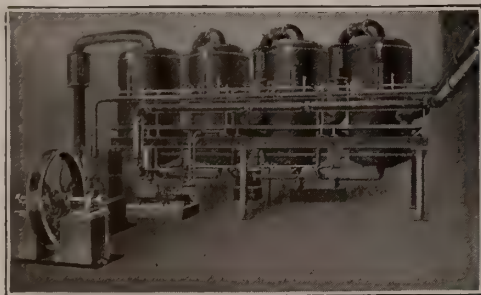
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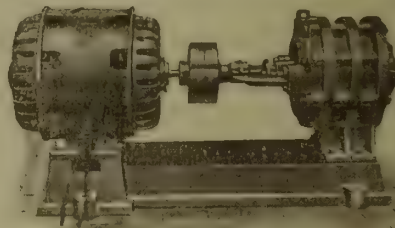


Saves steam

It also retains the proper amount of moisture in the paper thus eliminating the breaks at the calenders.

This regulator gives you a higher and more uniform finished paper with less calendering.

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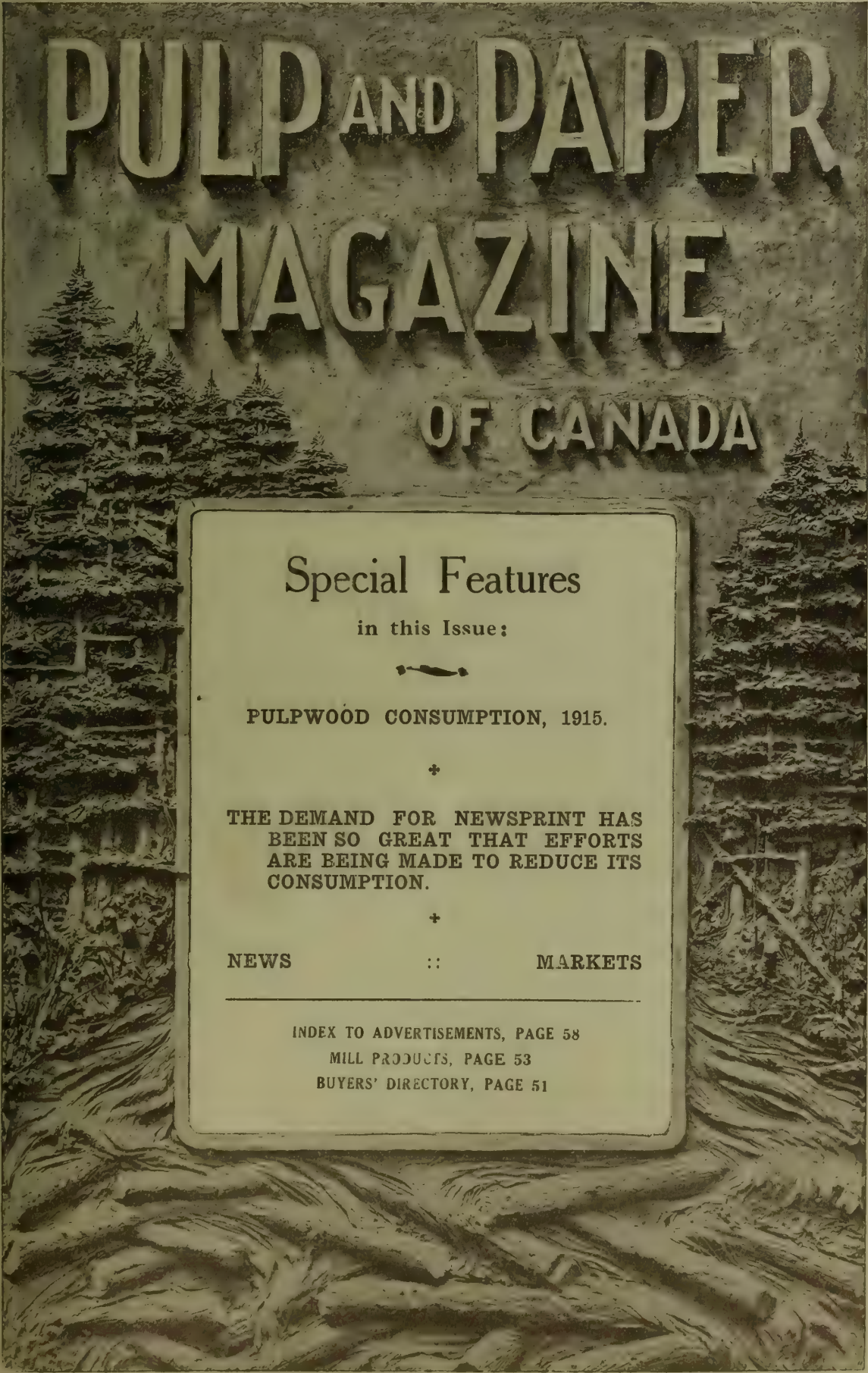
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PULP AND PAPER MAGAZINE OF CANADA



Special Features

in this Issue:

PULPWOOD CONSUMPTION, 1915.

THE DEMAND FOR NEWSPRINT HAS
BEEN SO GREAT THAT EFFORTS
ARE BEING MADE TO REDUCE ITS
CONSUMPTION.

NEWS

::

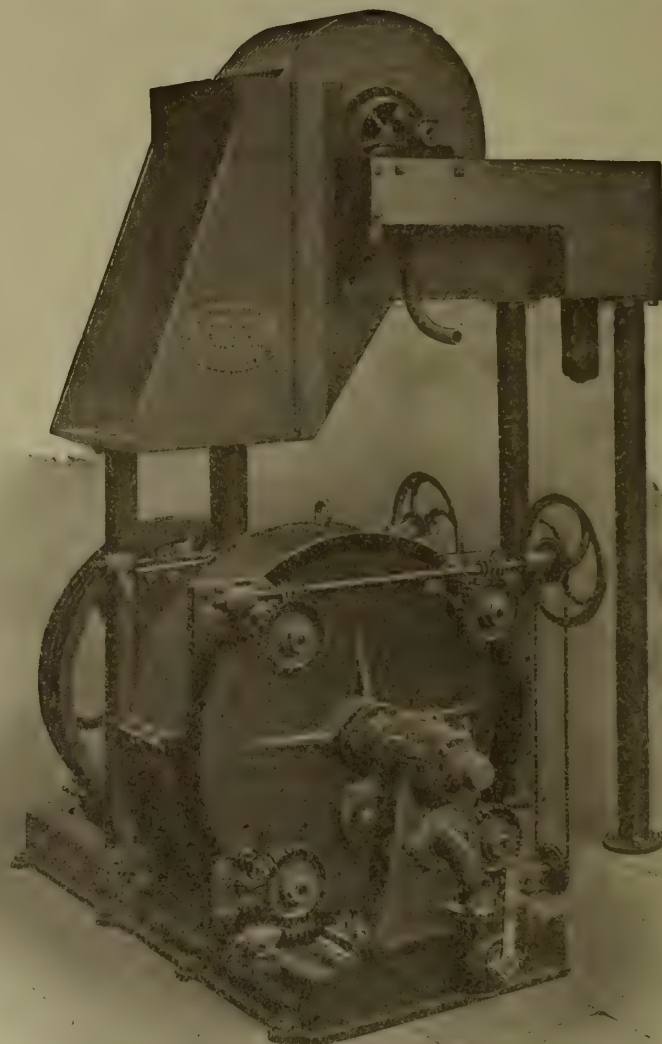
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

Bertrams Limited



MILNE'S PATENT REFINING ENGINE
(WITH LISTER'S PATENT CONCENTRATOR).
Code Word—"REFINCONCE"

THE ACTION OF THIS REFINER IS PERFECT
owing to the fact that pulp will not pass through the second set of Bars
UNTIL PROPERLY REDUCED
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BEFORE THEY CAN PASS OUTWARDS

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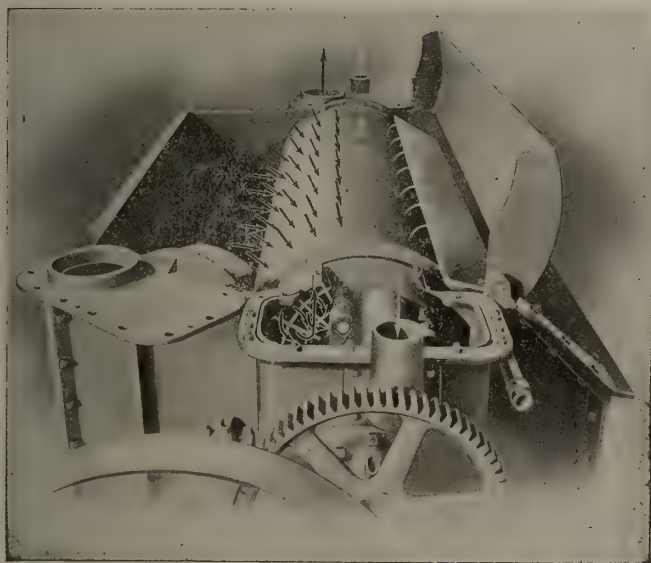
ACTS PERFECTLY FOR THIS PURPOSE

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The cost is very low compared with any system of sand filtration and the upkeep is very small.

EFFICIENCY

This machine will remove all mechanical dirt that will show in your paper and needs very little attention.



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We are fully equipped to Design, Manufacture
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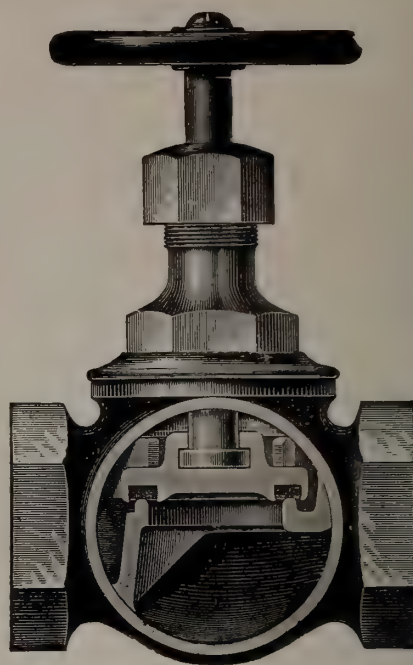


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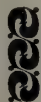
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the SAFEST and BEST material for

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*Panzl Linings are Safest
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They are really acid-proof and practically indestructible.

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is purest, strongest and highest free rosin size made. We can furnish you with an ideal rosin size and apparatus to use same.

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We are shipping our size in barrels or tank-cars.

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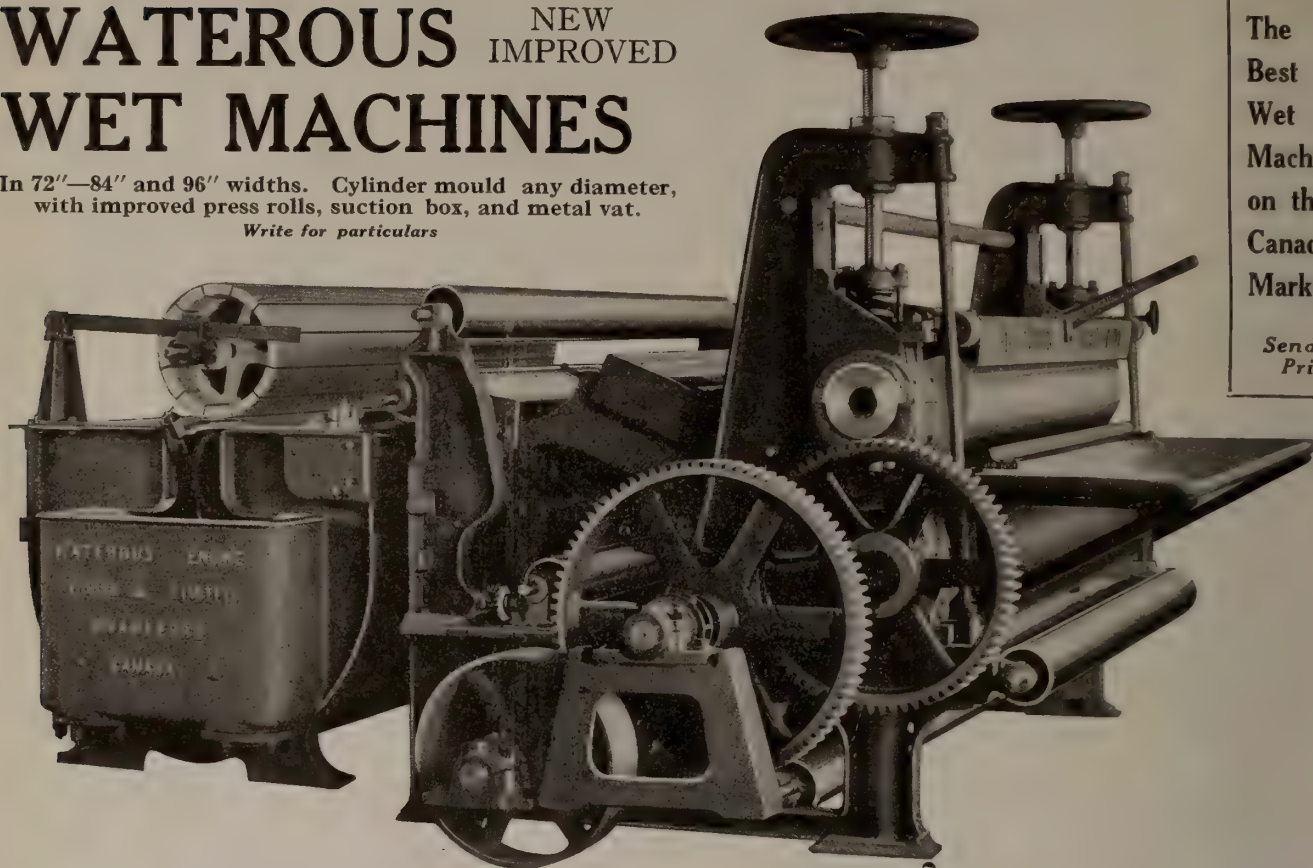
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In 72"—84" and 96" widths. Cylinder mould any diameter, with improved press rolls, suction box, and metal vat.

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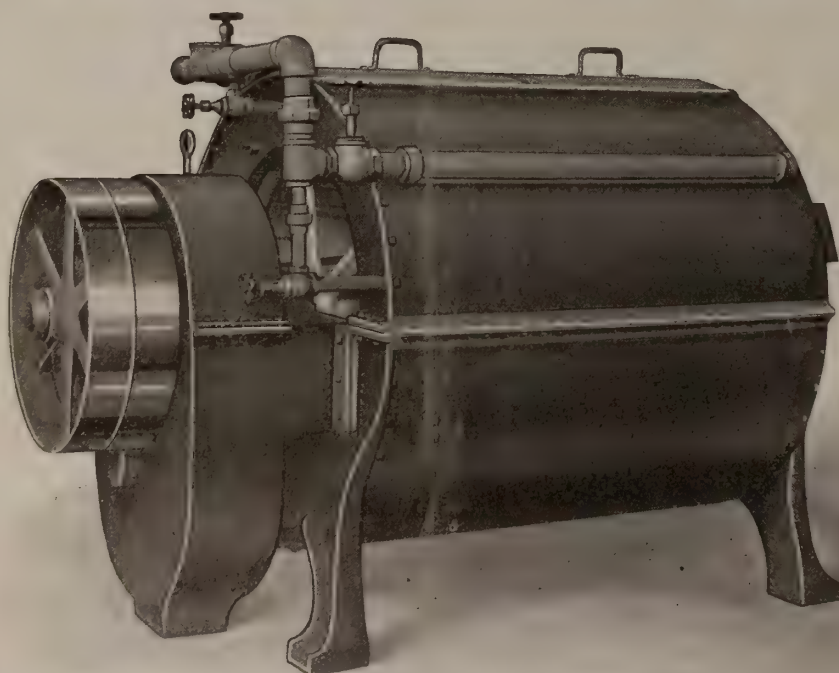
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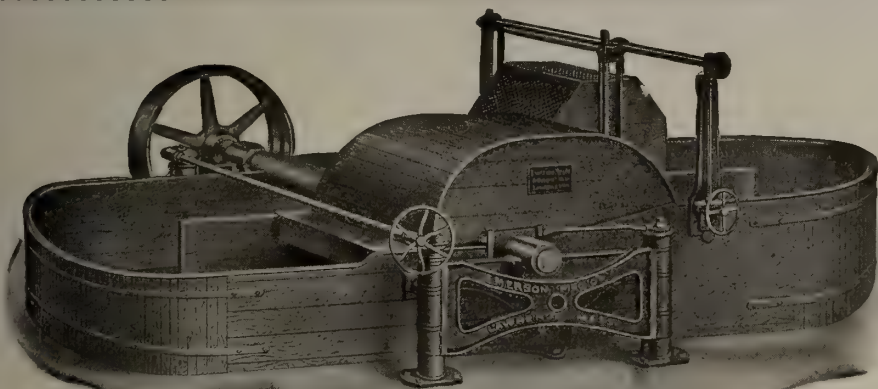
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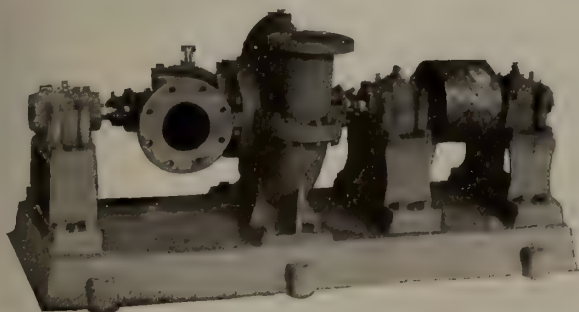
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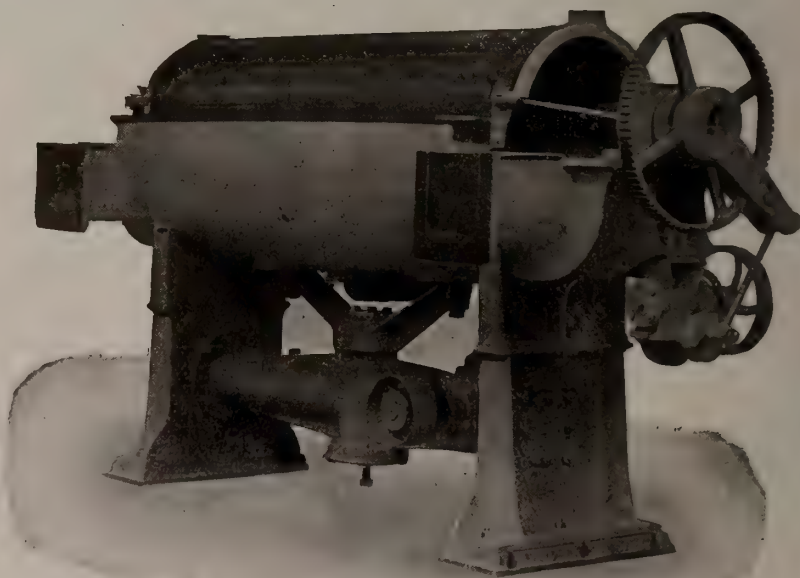
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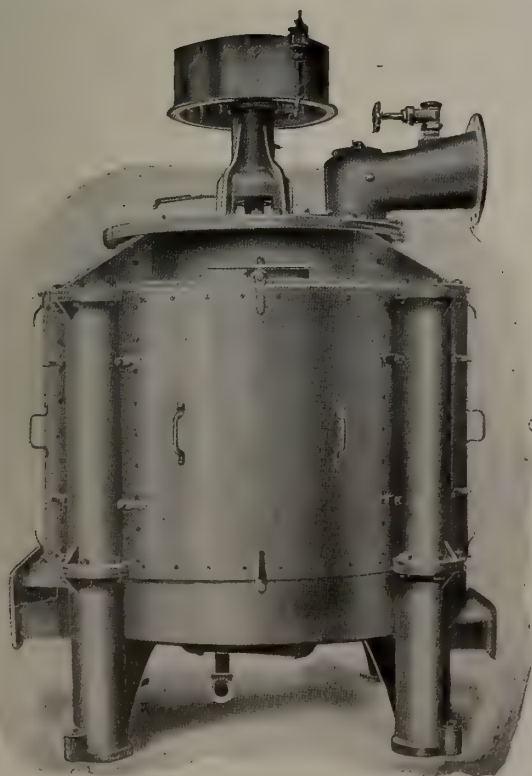
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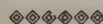
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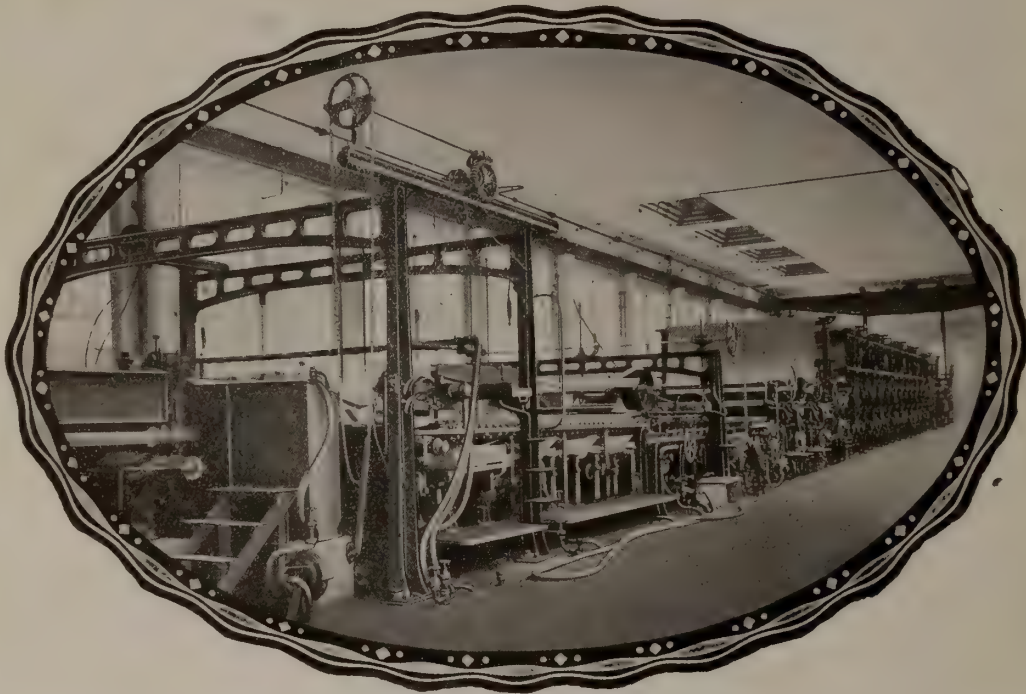
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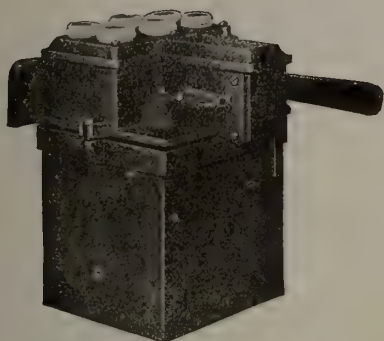
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PAPER AND
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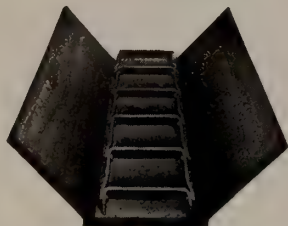
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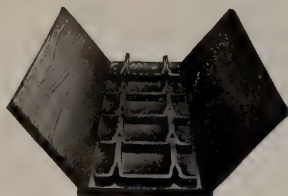
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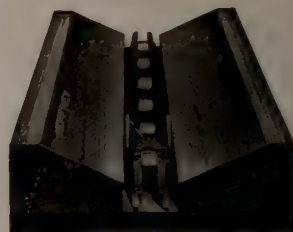
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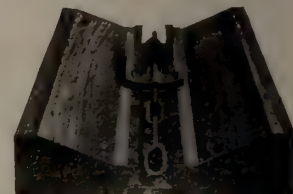
Ask for Copy of our Pulp and Paper
Mill Machinery Bulletin No. 98-5

The Jeffrey Manufacturing Co.

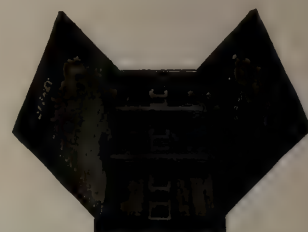
Canadian Branch and Warerooms—MONTREAL



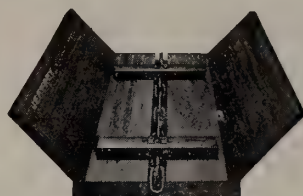
Malleable Roller Chain Log
Haul-up



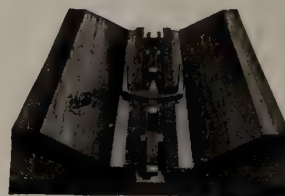
Long Link Welded Steel
Chain with Cast Steel
Haul-up Spur



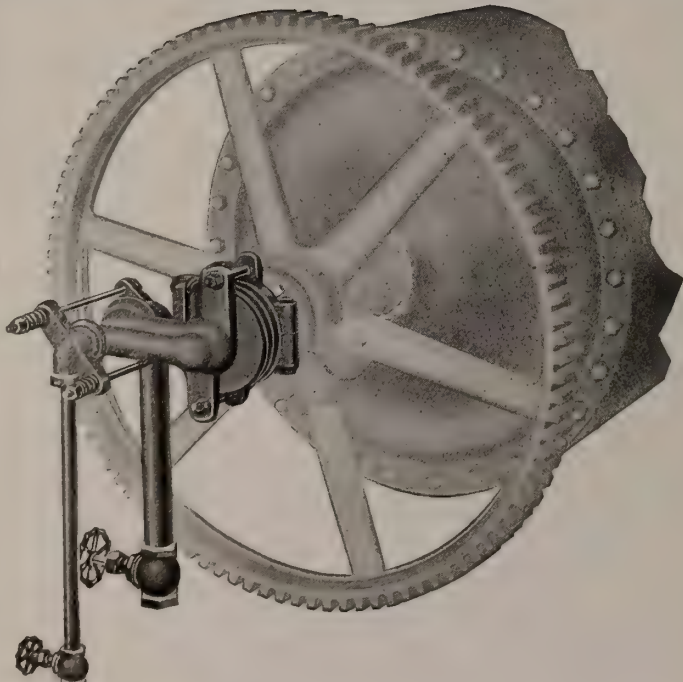
Detachable Chain with F-2
Attachments. A light ser-
vice conveyor



Long Link Coil Chain Pulp-
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Vulcan Chain with Cast
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and JACKETS

For Pulp and Paper Mills

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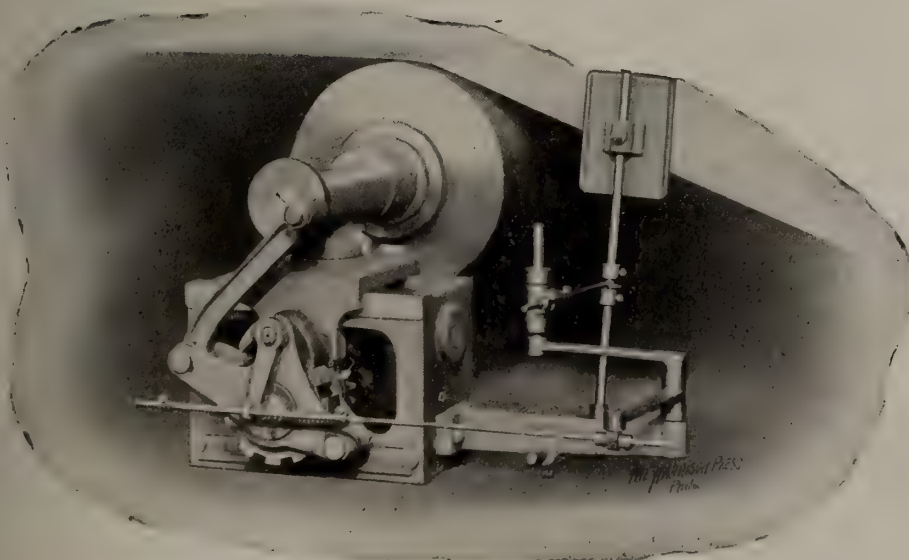
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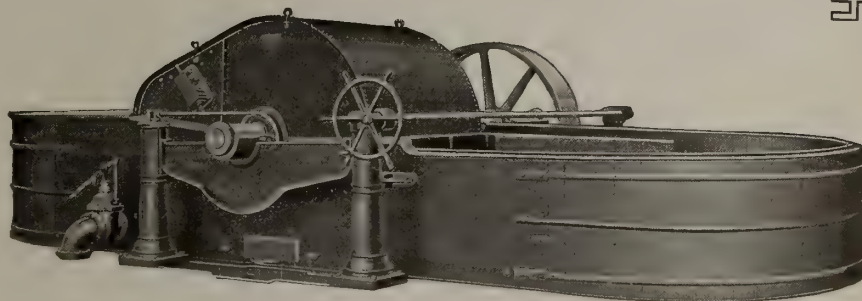
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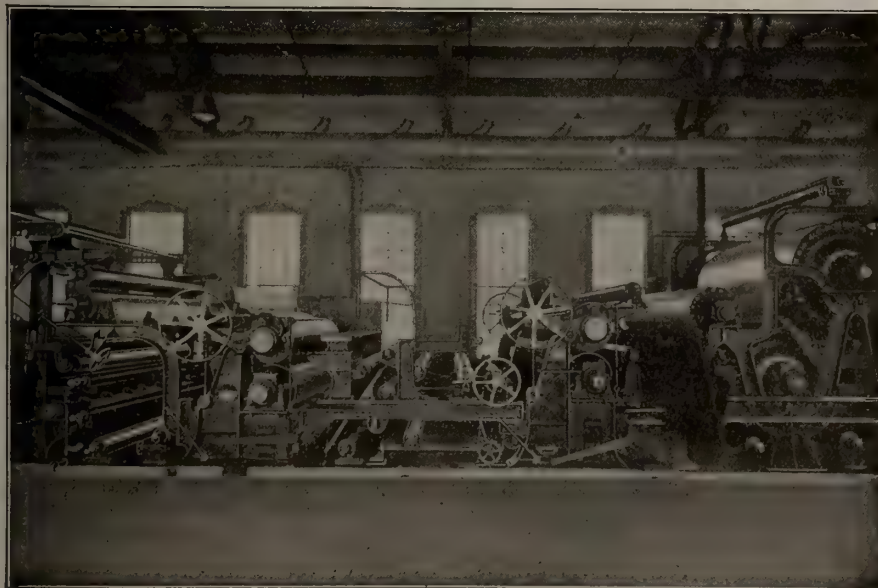
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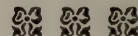
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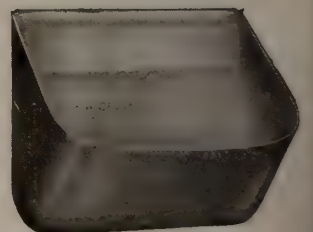
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Pulp and Paper Magazine

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No. 11

ANNUAL MEETING OF TECHNICAL SECTION.

The annual meeting of the Technical Section of the Canadian Pulp and Paper Association is to be held at Niagara Falls the end of June—a meeting which should attract all who can possibly attend. A few years ago the technical or scientific side of our industries received little or no attention. The men at the head of our great business enterprises were usually self-made, and prided themselves on their ability to get along without “book learning” or the college trained individual. Gradually they came to see things in a different light. Chemists showed these hard-headed men that some of the despised by-products which they allowed to go to waste were worth fortunes to them; others showed them that the technically trained, or efficient workman was infinitely superior to the common or garden variety of day laborer, and so on throughout a long list.

The result of these demonstrations was to convince the men at the head of our big businesses that the scientific man had a big place in the economic growth and well-being of our industrial life, and to-day the trained man is eagerly sought after, and held in the highest esteem. In the pork packing industry all that was once used was the sides and the hams of the hog. To-day a score of by-products add to the wealth of the packer; all that is lost being the squeal. In oil refining John D. Rockefeller has made himself the world's richest man through the researches of his chemists. In steel making, coal mining, textile plants and many other great industries the scientific side

has far outdistanced the so-called practical side.

To a very large extent the same is true of the pulp and paper industry. While not belittling the work of the self-made and self-taught individuals who have made good, it will generally be admitted that scientific investigation has accomplished wonders in connection with paper making. An institution like the Forest Products Laboratory at McGill is capable of rendering untold good to all users of forest products. The testing of various varieties of woods, the treating of cheaper kinds so they can be utilized in place of the more expensive ones, the solving of the vexed question of the utilization of waste material, and the furthering of the conservation movement are but a few of the problems coming up for solution. It is the experimental laboratory of the pulp, paper and lumber interests of the Dominion and its efforts to further the welfare of the great basic industries connected with our forests will be watched with sympathetic interest.

AID OUR RETURNED SOLDIERS.

The difficulties associated with the burying of a destitute soldier who died in Montreal a few days ago, calls attention to a very important problem confronting the people of this country.

The Pulp and Paper Magazine has repeatedly called the attention of the government and business men in general to the necessity of providing for the welfare of soldiers and their dependents. A generous policy in this respect would do much to stimulate recruiting. A man might be perfectly willing to go overseas, and

make the supreme sacrifice for himself, but hesitates about going when he thinks that his wife and children or others dependent upon him, might suffer through his absence at the front, or in after years, if he should be killed. It is unfair to expect a man to sacrifice his life, and at the same time sacrifice his family. Those of us who remain at home should pay and support the dependents of those who go out to the front and fight our battles.

The government has called for 500,000 men from Canada, but up to the present time we have enlisted but slightly over 300,000. The other 200,000 will make a severe drain upon our resources unless we organize and take stock of our available men. A big help towards securing these additional men would be made by providing generously for returned soldiers and their dependents. The present pension paid a returned soldier is totally inadequate to keep him in any reasonable comfort, while the provision made for the wives and children of the soldiers is also inadequate. If men who have not yet enlisted, but who are considering the thing, were to see returned soldiers or the wives and children of soldiers now at the front, being properly cared for, they would have little hesitation in deciding to enlist. A niggardly policy on the part of the government and those responsible for the treatment of our soldiers, will do much to discourage recruiting and thereby protract the war.

CANADA'S PULP AND PAPER INDUSTRY.

Elsewhere in this issue is published a comprehensive report of the pulp and paper industry of Canada, prepared under the auspices of Mr. R. H. Campbell, of the Forestry Department. The report, which is a most exhaustive one, is well worth the careful perusal of every person interested in the pulp and paper industry, and also by all those concerned with the growth of one of the most important of the nation's basic industries.

The consumption of wood in Canada for the manufacture of pulp has increased three-fold in the past eight years, the value in the same time increasing from slightly under three million dollars to nearly nine and a half million. Fifty mills reporting to the government show a consumption in 1915 of 1,405,000 cords of wood, valued at \$9,426,000, with an average value of \$6.71.

Canada produced pulpwood in 1915, valued at \$15,590,000, of which \$6,164,000 worth was exported. The Province of Quebec leads in the number of mills, and in the value of pulpwood exported, possessing 24 out of the 50 mills, and exporting \$4,111,000 worth of pulpwood. Altogether the report shows that the pulp and paper industry in the Dominion of Canada is on a sound basis, and has grown to be one of our leading industries. It is a basic industry, having its foundation in the forests of the land. It is therefore most important that we should conserve our forestry resources in

the best possible manner, so as to insure for all time, a supply of pulpwood for the many expensive mills operating in the Dominion.

TECHNICAL SECTION TO MEET AT NIAGARA.

The next meeting will take the form of visits to pulp and paper mills in the Niagara District and instead of technical papers there will be informal discussions during the two days that the members are together. The mills have shown their interest in the scheme by generously inviting the members of the Technical Section to be their guests. The Ontario Paper Company, Limited, the Kinleith Paper Company, the Beaver Board & Fibre Company, the Riordon Pulp and Paper Company, Limited, and the Provincial Paper Mills Company, Limited, have volunteered to provide transportation by boat, trolley car and automobiles to the different mills, to entertain the members at lunch and dinner on Thursday, June 29th, and to provide rooms at the Clifton Hotel, Niagara Falls. It is hoped that the members of the Technical Section will respond to these courtesies by coming in full force.

The tentative programme is as follows:

Members from the East will meet in Toronto early Thursday morning, June 29th, and leave on the Niagara, St. Catharine and Toronto Navigation steamer at 8 a.m., arriving at Port Dalhousie at 11 a.m. A special trolley car will take the party to Thorold. Lunch will be at 12 o'clock and those members coming by other routes should arrange to join the party at this 12 o'clock lunch in Thorold. At 1.30 p.m. automobiles will take us to the news mills of the Ontario Paper Company, Limited, in Thorold. At 3.30 p.m. the party will proceed by automobiles to the plant of the Beaver Board and Fibre Company. After these plants have been visited a special trolley car will run to Niagara Falls, Ont., arriving at the Clifton Hotel at about 6 p.m. The members will be the guests of the paper companies at dinner at 7.30 p.m. A meeting of the Technical section will be held in the evening for business and discussion. The companies have very kindly offered to provide rooms at the Clifton Hotel for Thursday night.

On Friday morning, June 30th, the members will meet after breakfast and leave at 10 o'clock to visit the Cliff Paper Company's mill across the river in Niagara Falls, N.Y. Their Voith grinders should be a special attraction. Later in the morning one of the Niagara power plants could be visited and at 12.30 the party is invited to lunch at the Clifton Hotel. At 1.30 p.m. a special trolley car will return to Thorold. The members will see the book and writing mills of the Provincial Paper Mills Company, Limited, at 2 o'clock, the Interlake Tissue Mills, Limited, Merriton, at 3 o'clock, and possibly one or two other mills later in the afternoon.

No special plans have been made for Friday evening. If any of the party wish to go back to Niagara Falls a trolley car will be at their service. Some of the members coming from the East may want to take the opportunity of returning by steamer from Toronto to Montreal through the Thousand Islands. Reservations will have to be made in good time on account of the holiday rush.

Probably no place in the country is there such a good chance to see a variety of pulp and paper mills as in the Niagara District. In addition to this attraction there is the cordial invitation of the Niagara com-

panies to enjoy their hospitality. Dominion Day holiday directly follows the meetings so that the week-end will be free for sight-seeing or other plans that the members may want to carry out.

The arrangements for the meeting are in the hands of Mr. Dan Daverin, Provincial Paper Mills Company, Limited, Thorold, Ont., and all those planning to attend should get in touch with Mr. Daverin as soon as possible. A circular notice giving full details of the meeting will be sent out to the members of the Technical Section nearly in June. Dr. Daverin will want to know who is coming so that steamer reservations, hotel accommodations, automobiles, etc., can be arranged for.

CANADIAN PULPWOOD CONSUMPTION IN 1915

(Special to Pulp and Paper Magazine.)

The growth of the pulp and paper industry in Canada has been characterized by rapidity and steadiness. Since 1908, when reliable statistics were first gathered, the consumption of wood in Canada for the manufacture of pulp has increased almost threefold. There has been a decided increase every year, with one exception. A slight decrease in 1910 of 3.8 per cent was due to the temporary closing down of two of the larger mills. The increases have varied between 10.4 and 28.9 per cent. There are few manufacturing industries in Canada which can show a more satisfactory record. The figures illustrate this fact more clearly.

	cords.	
1908	482,777	\$2,931,653
1909	622,129	3,464,080
1910	598,487	3,585,154

1911	672,288	4,338,024
1912	866,042	5,215,582
1913	1,109,034	7,243,368
1914	1,224,376	8,089,868
1915	1,405,836	9,426,217

Fifty firms and individuals operating pulp mills in Canada in 1915 contributed the information on which this bulletin is based. Of the mills operating in 1914, only one was reported as idle in 1915. Two entirely new mills began to manufacture pulp in that year, and two idle mills resumed operations.

The Canadian pulp mills in 1915 consumed a total of 1,405,836 cords of pulpwood, valued at \$9,426,217. During the same year 949,714 cords, valued at \$6,164,113, were exported to the United States, making a total of 2,355,550 cords, valued at \$15,590,330, as the cut of pulpwood from Canada's forests in 1915.

Table I.

Pulpwood, 1914 and 1915, by Provinces. Quantity used and Total Value, 1915. Average Value 1914, and 1915, and per cent distribution, 1915.

Provinces	No. of Firms Reporting	Quantity		Per cent Distribution	Total Value	Average Value per M Ft. B.M.	
		1914	1915	1915	1915	1914	1915
		Cords	Cords		\$	\$ c.	\$ c.
CANADA	50	1,224,370	1,405,836	110.0	9,426,217	6 61	6 71
Quebec	24	636,496	697,962	49.6	4,227,033	6 52	6 06
Ontario	15	447,751	480,627	34.2	3,806,804	7 08	7 92
New Brunswick	4	49,339	115,842	8.2	732,521	6 01	5 32
British Columbia	2	80,013	90,535	6.4	550,809	5 33	6 08
Nova Scotia	5	10,777	20,870	1.5	99,050	4 27	4 75

DIAGRAM NO. 1.

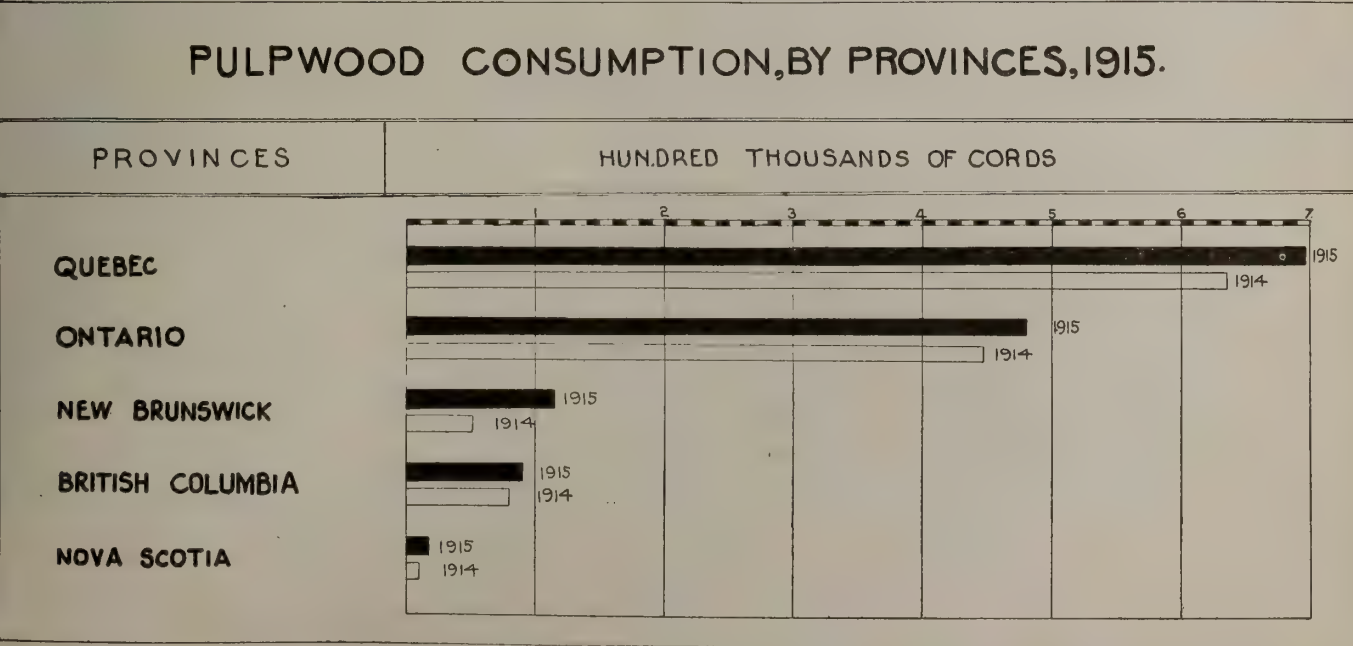


Table II

Pulpwood, 1914 and 1915, by kinds. Quantity used and total value 1915. Average value 1914 and 1915, and per cent distribution, 1915.

Kinds of Wood	No. of Firms Reporting	Quantity		Per cent Distribution 1915	Total Value 1915 \$	Average Value per M Ft. B.M.	
		1914 Cords	1915 Cords			1914 \$ c.	1915 \$ c.
TOTAL	502	1,224,376	1,405,836	100.0	9,426,217	6 61	6 71
Spruce	50	836,387	998,156	71.0	7,057,572	6 70	7 07
Balsam Fir	33	314,183	307,219	21.9	1,795,372	6 58	5 84
Hemlock	6	45,246	55,265	3.9	325,411	5 63	5 89
Jack Pine	4	29,715	41,953	3.0	225,259	5 49	5 37
Poplar	3	3,845	3,243	0.2	22,503	6 81	6 94

Pulpwood.

The manufacture of pulpwood is one of the few industries, not engaged in the production of munitions, which has not suffered from war conditions. While the cost of raw material has increased and labor conditions have been disturbed, the demand for pulp has increased for American consumption, and the difficulty of obtaining this commodity from Scandinavian sources has increased the overseas demand. The consumption of wood for pulp manufacture in Canada shows an increase of 14.8 per cent in 1915. Increases are to be noted in every Province in Canada, as follows: Quebec, 9.7 per cent.; Ontario, 7.3; New Brunswick, 134.8; (bringing this province up to third on the list in place of British Columbia), British Columbia 13.2, and Nova Scotia 93.7.

The average value of pulp wood at the mill was an increase of 10 cents per cord over that of 1914. The value increased in every Province but Quebec.

The wood of the jack pine (*Pinus Banksiana*), has objectionable features and the tree has not been cut extensively for lumber in Canada. The manufacture of sulphate or kraft pulp, has opened a new market for the wood of this tree. In 1912 only 40 cords of this wood were reported as having been used for pulp making. In 1913, when the kraft pulp was first made extensively 19,383 cords were reported, all of which was used in the sulphate process. The increase from 1914 to 1915 was almost 70 per cent.

There was a smaller increase in the use of spruce and hemlock, and a decrease in balsam fir and poplar. While these five woods are the only ones reported, it should be borne in mind that small quantities of white and red pine and tamarack are often used. Spruce pulp wood and balsam fir pulp wood as purchased by the mills frequently contain a small accidental proportion of these woods, which is not reported.

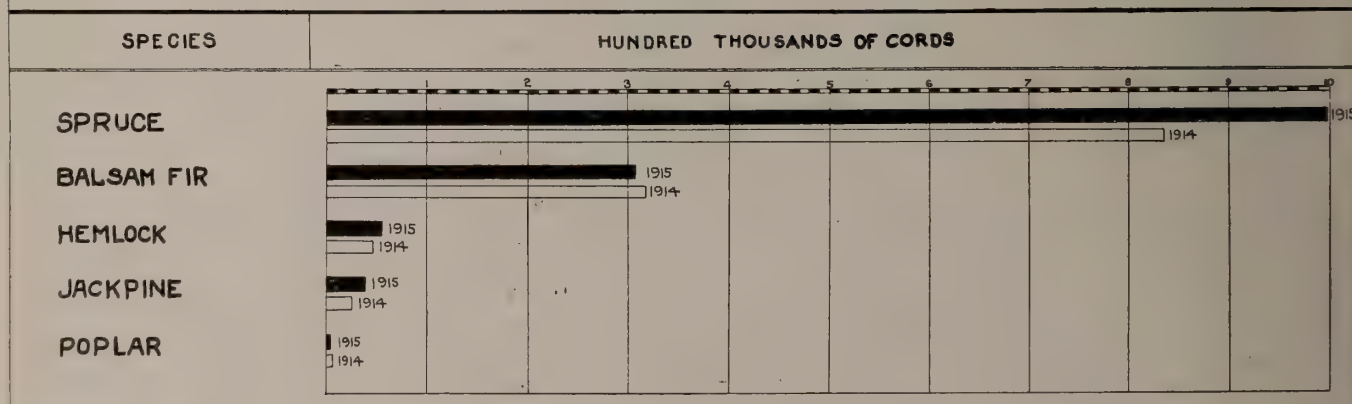
Table 3.

Pulpwood, 1914 and 1915, by processes. Quantity used and total value, 1915. Average value 1914 and 1915, and per cent distribution, 1915.

Processes	No. of Firms Reporting	Quantity		Per cent Distribution 1915	Total Value 1915 \$	Average Value per M Ft. B.M.	
		1914 Cords	1915 Cords			1914 \$ c.	1915 \$ c.
TOTAL	50	1,224,376	1,405,836	100.0	9,416,217	6 61	6 71
Mechanical	40	644,924	743,776	52.9	4,821,227	6 86	6 48
Sulphite	16	435,101	470,949	33.5	3,434,015	6 76	7 20
Sulphate	5	140,666	184,811	13.1	1,128,318	4 96	6 11
Soda	1	3,785	6,300	0.5	42,657	7 00	6 77

DIAGRAM NO. 2.

PULPWOOD CONSUMPTION, BY SPECIES. 1915.



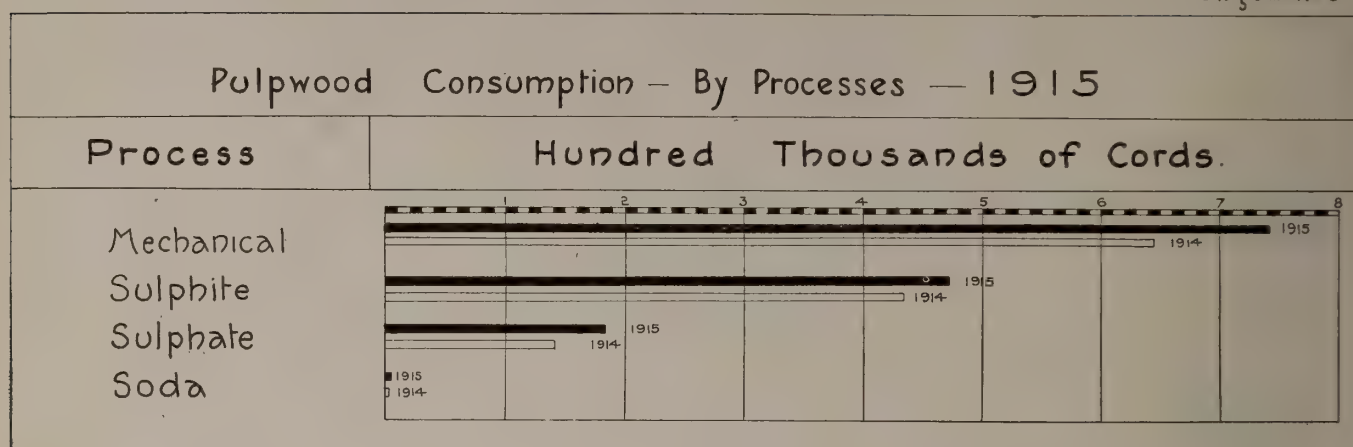
The proportion of wood used in the mechanical and chemical processes of pulp making remained about the same in 1915 as in 1914. The percentage of wood converted into pulp by chemical process increased from

36.5 per cent in 1908 to 47.3 per cent in 1914, and 47.1 per cent in 1915. Almost half the wood consumed in the industry now goes to make chemical pulp. The use of wood has increased in actual quantity with all four of the processes used.

Table IV.

Pulpwood, 1915, by Provinces, kinds of wood, and processes; number of active firms reporting, quantity of pulpwood used, quantity of pulp produced, quantity of each kind of wood used in each process, total cost and average cost per cord.

	Total	Quebec	Ontario	New Brunswick	British Columbia	Nova Scotia
Number of active firms reporting	50	24	15	4	2	5
Pulp Produced:—						
Aggregate, tons	1,074,805	561,793	364,226	62,093	65,823	20,870
Mechanical, tons	743,776	425,626	247,825	8,344	41,111	20,870
Sulphite, tons	235,474	50,612	106,401	53,749	24,712	.....
Sulphate, tons	92,405	82,405	10,000	.....	.....	.....
Soda, tons	3,150	3,150	.....	.....	.....	.....
Wood Used:—						
Aggregate, cords	1,405,836	697,962	480,627	115,842	90,535	20,870
Aggregate cost	\$9,426,217	\$4,237,033	\$3,806,804	732,521	550,809	99,050
Average cost	\$ 6.71	\$ 6.07	\$ 7.92	\$ 6.32	\$ 6.08	\$ 4.75
Mechanical, cords	743,776	425,626	247,825	8,344	41,111	20,870
Sulphite, cords	470,949	101,225	212,802	107,498	49,424	.....
Sulphate, cords	184,811	164,811	20,000	.....	.....	.....
Soda, cords	6,300	6,300	.....	.....	.....	.....
Spruce:—						
Total, cords	998,156	455,165	396,115	92,060	34,526	20,290
Total cost	\$7,057,672	\$2,914,369	\$3,221,397	\$598,456	\$226,687	\$ 96,763
Average cost	\$ 7.07	\$ 6.40	\$ 8.13	\$ 6.50	\$ 6.57	\$ 4.77
Mechanical, cords	542,251	280,123	213,779	5,562	22,497	20,290
Sulphite, cords	344,773	67,910	178,336	86,498	12,029	.....
Sulphate, cords	106,714	102,714	4,000	4,418	.....	.....
Soda, cords	4,418	4,418	.....	.....	.....	.....
Balsam Fir:—						
Total, cords	307,219	213,376	6,631	23,782	3,000	430
Total cost	\$1,795,372	\$1,130,455	\$ 515,215	\$134,065	\$ 14,000	\$ 1,637
Average cost	\$ 5.84	\$ 5.30	\$ 7.73	\$ 5.64	\$ 4.66	\$ 3.81
Mechanical, cords	179,540	143,370	32,958	2,782	.....	430
Sulphite, cords	88,455	30,782	33,673	21,000	3,000	.....
Sulphate, cords	39,224	39,224	.....	.....	.....	.....
Hemlock:—						
Total, cords	55,265	286	1,820	.....	53,009	.....
Total cost	\$ 325,411	\$ 1,144	\$ 13,495	.....	\$310,122	.....
Average cost	\$ 5.89	\$ 4.00	\$ 7.41	.....	\$ 5.85	.....
Mechanical, cords	19,791	.....	1,027	.....	18,614	.....
Sulphite, cords	35,188	.....	793	.....	34,395	.....
Sulphate, cords	286	286	.....	.....	.....	.....
Jack Pine:—						
Total, cords	41,953	25,953	16,000	.....	.....	.....
Total cost	\$ 225,259	\$ 169,259	\$ 56,000	.....	.....	.....
Average cost	\$ 5.37	\$ 6.52	\$ 3.50	.....	.....	.....
Mechanical, cords	2,133	2,133	.....	.....	.....	.....
Sulphite, cords	1,233	1,233	.....	.....	.....	.....
Sulphate, cords	38,587	22,587	16,000	.....	.....	.....
Poplar:—						
Total, cords	3,243	3,182	61	.....	.....	.....
Total cost	\$ 22,503	\$ 21,806	\$ 6,697	.....	.....	.....
Average cost	\$ 6.94	\$ 6.85	\$ 11.42	.....	.....	.....
Mechanical, cords	61	.....	61	.....	.....	.....
Sulphite, cords	1,300	1,300	.....	.....	.....	.....
Soda, cords	1,882	1,882	.....	.....	.....	.....

Diagram N^o 3**Table V.**

Canadian Pulpwood Exported Unmanufactured vs. that Manufactured in Canada, 1913 and 1914; Quantity, average value per cord and per cent distribution.

	1914				1915			
	Quantity Cords	Value \$	Value per cord \$ c.	Per cent	Quantity Cords	Value \$	Value per cord \$ c.	Per cent
Canada:—								
Production . . .	2,196,884	14,770,358	6 72	100.0	2,355,500	15,590,330	6 62	100.0
Manufacture . . .	1,224,376	8,089,868	6 60	55.7	1,405,836	9,426,217	6 71	59.7
Export	972,508	6,680,490	6 87	44.3	949,714	6,164,113	6 49	40.3
Quebec:—								
Production . . .	1,323,917	8,882,899	6 71	100.0	1,322,231	8,338,525	6 31	100.0
Manufacture . . .	636,496	4,148,405	6 52	48.1	697,962	4,227,033	6 06	52.8
Export	687,421	4,734,494	6 77	51.9	624,269	4,111,492	6 59	47.2
Ontario:—								
Production . . .	587,494	4,020,510	6 84	100.0	682,866	5,063,618	7 42	100.0
Manufacture . . .	447,751	3,172,235	7 08	76.2	480,627	3,806,804	7 92	70.4
Export	139,743	848,275	6 07	23.8	202,238	1,256,814	6 21	29.6
New Brunswick:—								
Production . . .	193,126	1,382,315	7 16	100.0	235,738	1,503,346	6 38	100.0
Manufacture . . .	49,339	296,769	6 01	25.5	115,842	732,521	6 32	49.1
Export	143,787	1,086,546	7 55	74.5	119,896	770,825	6 43	50.9
British Columbia:—								
Production . . .	80,013	426,444	5 33	100.0	90,535	550,809	6 08	100.0
Manufacture . . .	80,013	426,444	5 33	100.0	90,535	550,809	6 08	100.0
Nova Scotia:—								
Production . . .	12,344	58,190	4 72	100.0	24,180	124,032	5 13	100.0
Manufacture . . .	10,777	46,015	4 27	87.4	20,870	99,050	4 75	86.3
Export	1,557	12,175	7 82	12.6	3,310	24,982	7 55	13.7

Approximately 1,074,805 tons of air-dry pulp were manufactured in Canada in 1915. Assuming that one cord of wood will produce one ton of groundwood pulp, or one-half ton of chemical fibre. This total is an increase of 15 per cent over 1914. With groundwood pulp the increase was 15.3 per cent, and with chemical fibre made by the three processes together 14.2 per cent. The manufacture of chemical fibre by the sulphite process shows an increase of 8.2 per cent by

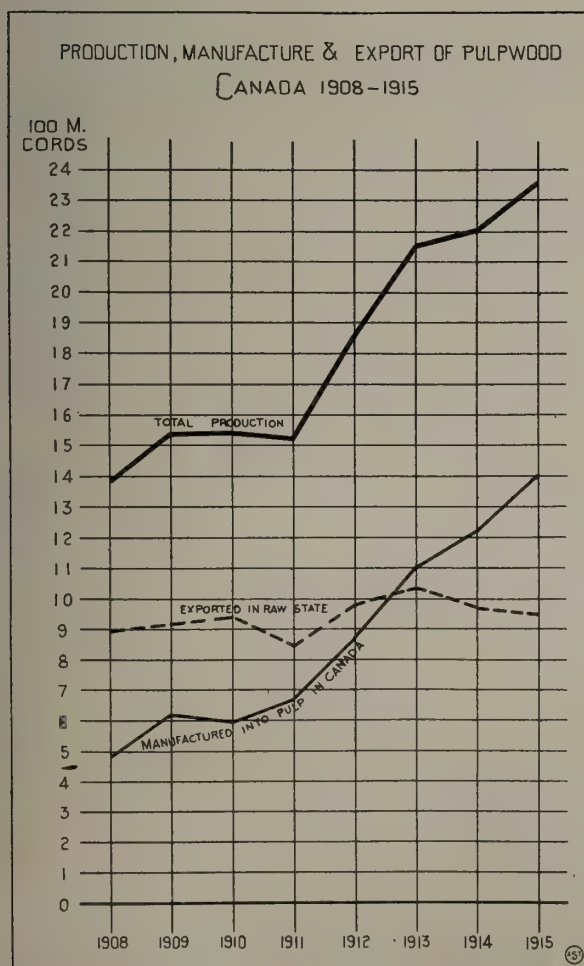
the sulphate process 31.4 per cent, and by the soda process 66.4 per cent.

Spruce and balsam fir are used in all five provinces, and in all four processes of pulp manufacture. Hemlock was not reported from New Brunswick nor used in making soda pulp. Jack pine was reported only from Ontario and Quebec, and was used in making sulphate pulp alone. Poplar was reported from Ontario and Quebec only, and was not used in making sulphate pulp.

Table VI.

Exports of Wood-pulp, 1913 and 1914; Quantity total value, average value per ton, per cent distribution and countries to which exported.

Kinds of Pulp and Countries to which exported	1914				1915			
	Quantity Tons	Value \$	Av. Value per ton \$ c.	Per cent distn	Quantity Tons	Value \$	Av. Value per ton \$ c.	Per cent dist
Wood-pulp exported								
Aggregate	424,883	8,865,436	20.87	100.0	364,170	9,279,414	25.48	100.0
Total Mechanical								
Pulp	314,485	4,509,260	14.34	74.0	206,701	3,239,599	15.67	56.8
Total Chemical Pulp	110,398	4,356,176	39.46	26.0	157,469	6,039,815	38.36	43.2
Total to United States	295,674	7,008,312	23.70	69.6	318,498	8,357,747	26.24	87.5
Mechanical	190,095	2,832,909	14.90	....	170,804	2,679,274	15.69	....
Chemical	105,579	4,175,403	39.55	....	147,694	5,678,473	38.45	....
Total to Gt. Britain	116,843	1,581,101	13.53	27.5	18,488	324,032	17.53	5.1
Mechanical	116,820	1,580,301	13.53	....	17,537	287,255	16.38	....
Chemical	23	800	34.78	....	951	36,777	38.67	....
Total to France	7,612	97,475	12.81	1.8	18,335	272,700	14.87	5.0
Mechanical	7,569	96,050	12.69	....	18,335	272,700	14.87	....
Chemical	43	1,425	33.14	....	.....	.....	....	....
Total to Japan	4,755	178,548	37.55	1.1	8,666	317,842	36.68	2.4
Chemical	4,755	178,548	37.55	....	8,666	317,842	36.68	....
Total to China . . . .	.....	.....	.....	....	112	4,243	37.88	....
Chemical . . . . .	.....	.....	.....	....	112	4,243	37.88	....
Total to Australia . .	.....	.....	.....	....	35	2,094	59.83	....
Chemical . . . . .	.....	.....	.....	....	35	2,094	59.83	....
Total to Cuba . . . . .	.....	.....	.....	....	25	370	14.80	....
Mechanical . . . . .	.....	.....	.....	....	25	370	14.80	....
Total to New Zealand	.....	.....	.....	....	11	386	35.09	....
Chemical . . . . .	.....	.....	.....	....	11	386	35.09	....



This diagram illustrates the rapid growth in Canada of the production of pulpwood and its manufacture into pulp in Canadian mills. In 1908 the quantity exported in the raw state exceeded the quantity manufactured in Canada by 312,119 cords. The proportion of manufactured wood increased steadily until the two were almost equal in 1912 and in 1915 the home consumption exceeded the export by 456,122 cords. The quantity exported has increased by only 19.5 per cent during that period, while the quantity consumed in Canadian pulp mills has increased by 191.2 per cent.

The figures for pulpwood exports in the table above were obtained from the Department of Customs. The total production of pulp wood increased in Canada by 7.2 per cent. The quantity manufactured in Canada increased by 14.8 per cent, while the quantity exported unmanufactured decreased by 2.3 per cent. Increases in production are to be noted in every province but Quebec; increases in manufacture in every province, and increases in export in Ontario and Nova Scotia, with decreases in Quebec and New Brunswick. No pulp wood has been exported from British Columbia since 1913.

Wood Pulp.

The export of wood pulp from Canada has alternately increased and decreased every year from 1909 to 1915. The total in 1915 is a decrease of 14.3 per cent from that of 1914. The United States, France and Japan purchased Canadian pulp in greater quantities than in the previous year, and China, Australia, Cuba and New Zealand were added to the list, but the exports to Great Britain fell off by over ninety-eight

thousand tons, bringing the total export below that of 1914.

The export of mechanical pulp decreased by 34.3 per cent, decreasing to the United States and Great Britain, and increasing to France. The export of chemical fibre showed an increase of 42.6 per cent, increasing to the United States, Great Britain and Japan. No chemical pulp was exported to France in 1915.

The average value per ton of pulp exported increased by \$4.61, increasing with groundwood and decreasing with chemical fibre.

Table VII.

Imports of Wood-pulp, 1913 and 1914; Total value, per cent distribution and countries from which imported.

Countries from which imported	1914		1915	
	Value	per cent Dist.	Value	per cent Dist.
Total value of				
Imports	424,601	100.0	423,331	100.0
United States .	216,361	51.0	216,843	74.8
Sweden	136,540	32.2	105,743	25.0
Great Britain . .	4,375	1.0	745	0.2
Switzerland . . .	5,285	1.2	.....	.....
Norway	61,254	14.4	.....	.....
Austria-Hungary	786	0.2	.....	.....

PRODUCTION AND SHIPMENT REPORT.

The following report dealing with the production and shipments of United States and Canadian paper mills was compiled by Mr. G. F. Steele, of the News-

Print Manufacturers' Association. It shows that during April the industry had the best month in its history.

Counting all mills producing news-print and hanging paper, the production for the month of April averaged 6,481 tons daily, as compared with production of March of 6,482 tons daily. This gives us practically 95.20 per cent. of maximum productive capacity, which is well above normal production.

I desire particularly to call your attention to the continued large consumption of news-print paper during the month of April. In ordinary years this is not usually the case.

It is particularly interesting to note in this respect the comparison of production and shipments in April, 1916, with the situation a year ago.

I particularly desire to call your attention to the fact that inventories have declined about 14 per cent since January 1st of this year. I had not expected so strong a statement, in view of the fact that quite a number of mills producing news-print paper have been tempted by high prices to be obtained by manufacturing other grades of paper, to limit the production of news-print paper, but by dint of hard crowding and running over time, this shortage has been made up. It hardly seems possible that we can keep on at this high rate of consumption, and it must be that we are at the apex of the demand at present, and that we shall soon begin to accumulate storage stocks against the high demand which is sure to occur in the Fall. The figures follow:

MONTH OF	Days in month	Co's report- ing	PRODUCTION					SHIPMENTS		Total Stocks on hand at all points
			Maximum in tons		Actual in tons		Per cent of maximum	Total tons during month	Per cent. of maximum	
			Per Month	Per Day	Per Month	Per Day				
United States Mills.										
1915.										
Year average		33	1,232,560	3,976	1,001,662	3,231	81.2	1,031,832	83.7	54,592
1915.										
April	27	33	103,844	3,994	84,778	3,261	81.6	88,947	85.6	72,968
1916.										
January	26	32	99,866	3,841	88,522	3,405	88.6	88,461	88.5	54,255
February	25	32	96,025	3,841	82,566	3,303	85.9	81,712	85.0	55,616
2 months	51	..	195,891	3,841	171,008	3,355	87.3	170,173	86.8	.....
March	27	32	103,707	3,841	91,110	3,375	87.8	96,305	92.8	51,523
3 months	78	..	299,598	3,841	262,198	3,362	87.5	266,478	88.9	.....
April	25	32	96,025	3,841	87,860	3,514	91.4	91,655	95.4	48,665
4 months	103	..	395,623	3,841	350,058	3,447	88.4	358,133	90.5	.....
Canadian Mills.										
1915.										
Year Average		11	503,285	1,624	428,858	1,383	85.2	428,821	85.2	25,898
1915.										
April	26	10	39,286	1,511	32,708	1,258	83.2	34,356	87.4	31,390
1916.										
January	25	12	43,950	1,758	42,228	1,689	96.0	38,356	87.2	29,831
February	25	12	43,950	1,758	41,833	1,673	95.1	41,244	93.8	30,485
2 months	50	..	87,900	1,758	84,061	1,681	95.6	79,600	90.5	.....
March	27	12	47,466	1,758	45,960	1,702	96.8	47,233	99.5	29,212
3 months	77	..	135,366	1,758	130,021	1,688	96.0	126,833	93.6	.....
April	25	12	43,950	1,758	41,572	1,663	94.5	46,785	106.4	24,002
4 months	102	..	179,316	1,758	171,593	1,682	95.6	173,618	96.8	.....
United States and Canadian Mills.										
1915.										
Year Average		44	1,735,845	5,600	1,430,520	4,615	82.4	1,460,653	84.1	80,490
1915.										
April		43	143,130	5,505	117,486	4,518	82.0	123,303	86.1	104,358
1916.										
January		44	143,816	5,599	130,750	5,094	90.9	126,817	88.1	84,086

February	44	139,975	5,599	124,399	4,976	88.8	122,956	87.8	86,101
2 months . . . . .	..	283,791	5,599	255,149	5,036	89.9	249,773	88.0	.....
March	44	151,173	5,599	137,070	5,077	90.6	143,538	94.9	80,735
3 months . . . . .	..	434,964	5,599	392,219	5,050	90.1	393,311	90.4	.....
April	44	139,975	5,599	129,432	5,177	92.4	138,440	98.9	72,667
4 months . . . . .	..	574,939	5,599	521,651	5,129	90.7	531,751	92.4	.....

LIST OF ACTIVE CANADIAN PULP MILLS.

The following is a list of firms operating pulp mills in Canada in 1915, to whom the Forestry Branch is indebted for the data on which this bulletin is compiled.

Quebec.

Belgo-Canadian Pulp and Paper Co., Ltd., Shawinigan Falls—Ground wood pulp and sulphite fibre.
Brompton Pulp and Paper Co., Ltd., Bromptonville and East Angus—Groundwood pulp and sulphate fibre.
Brown Corporation, La Tuque (office, Portland, Maine)—sulphate fibre.
Canada Paper Co., Ltd., Windsor Mills—Ground-wood pulp and soda fibre.
Chicoutimi Pulp Co., Chicoutimi and Ouatehouan Falls—Ground-wood pulp.
Donnacona Paper Co., Donnacona—Ground-wood pulp and sulphite fibre.
Dominion Paper Co., Kingsley Falls (office, Montreal)—Ground-wood pulp and sulphate fibre.
Eddy, E. B. Co., Ltd., Hull—Ground-wood pulp and sulphite fibre.
Gulf Pulp and Paper Co., Clarke City—Ground wood pulp.
Jacques Cartier Pulp and Paper Co., Pont Rouge (office, Montreal)—Ground-wood pulp.
Lake Megantic Pulp Co., Lake Megantic—Ground-wood pulp.
Laurentide Co., Ltd., Grand Mere—Ground-wood pulp and sulphite fibre.
Lotbiniere Lumber Co., Nicolet Falls (formerly Nicolet Falls Pulp and Lumber Co.)—Ground-wood pulp.
MacLaren, James, Co., Ltd., Buckingham — Ground-wood pulp.
Nairn Falls Power and Pulp Co., Murray Bay (formerly East Canada Power and Pulp Co.)—Ground-wood pulp.
Price Brothers and Co., Ltd., Kenogami and Jonquières (office Kenogami) — Ground wood pulp and sulphite fibre.

Price Porritt Pulp & Paper Co., Rimouski—Ground wood pulp.
Riviere du Loup Co., Ltd., Fraserville — Ground-wood pulp.
St. Lawrence Pulp and Lumber Corporation, Chandler (office Chicoutimi)—Sulphite fibre.
St. Maurice Paper Co., Ltd., (formerly Gres Falls Co.)—Ground-wood pulp.
Wayagamaek Pulp and Paper Co., Ltd., Three Rivers—Sulphate fibre.
Wilson, J. C., Ltd., St. Jerome—Ground-wood pulp.

Ontario.

Abitibi Power and Paper Co., Ltd., Iroquois Falls—Ground-wood pulp and sulphite fibre.
Beaver Wood Fibre Co., Ltd., Thorold—Ground-wood pulp.
Booth, J. R., Ottawa—Ground-wood pulp and sulphite fibre.
Bronson Company, Ottawa—Ground-wood pulp.
Davy Pulp and Paper Co., Ltd., Thorold—Ground-wood pulp.
Dryden Timber and Power Co., Ltd., Dryden—Sulphate fibre.

Foley-Reiger Pulp and Paper Co., Thorold—Ground-wood pulp.

Fort Francis Pulp and Paper Co., Fort Francis—Ground-wood pulp.

Northumberland Pulp Co., Ltd., Campbellford—Ground-wood pulp.

Ontario Paper Co., Ltd., Thorold—Ground-wood pulp:

Riordon Pulp and Paper Co., Ltd., Hawkesbury and Merrittton (office Montreal)—Sulphite fibre.

Spanish River Pulp and Paper Mills. Ltd., Sturgeon Falls, Espanola, and Sault Ste. Marie (office Sault Ste. Marie)—Ground-wood pulp and sulphite fibre.

Thorold Pulp Co., Ltd., Thorold—Ground-wood pulp.

Toronto Paper Manufacturing Co., Ltd., Cornwall—Sulphite fibre.

Trent River Paper Co., Ltd., Frankford—Ground-wood pulp.

Nova Scotia.

Campbell Lumber Co., Ltd., Weymouth—Ground-wood pulp.

Clyde River Pulp and Paper Co., Ltd., Clyde River—Ground-wood pulp.

La Have Pulp Co., Ltd., New Germany (office, Bridgewater)—Ground-wood pulp.

Macleod Pulp Co., Ltd., Milton (office, Liverpool)—Ground-wood pulp.

Nova Scotia Wood Pulp and Paper Co., Ltd., Mill Village—Ground-wood pulp.

New Brunswick.

Bathurst Lumber Co. Ltd., Bathurst—Sulphite fibre.

Dominion Pulp Co., Ltd., Chatham—Sulphite fibre.

Partington, Edward, Pulp and Paper Co., Ltd., St. John.—Sulphite fibre.

St. George Pulp and Paper Co., Ltd., St. George—Ground-wood pulp.

British Columbia.

British Columbia Sulphite Fibre Co., Ltd., Mill Creek, Howe Sound (office Vancouver) — Sulphite fibre.

Powell River Co., Ltd., Powell River—Ground-wood pulp and sulphite fibre.

TREATMENT FOR DISCOLORED CHINA CLAY.

According to the Dyer and Calico Printer, the yellow discoloration of clay is due to presence of iron and, to remedy it, a blue coloring agent such as a soluble aniline dye is added. This neutralizes the yellow and makes the clay appear whiter. It has also been proposed to remove the iron altogether by chemical treatment. An entirely new method has been patented by Messrs. Feldheimer and Gee, London [B. P. 894 (1915)]. To nullify the discoloration, some of the clay is first washed to free it from impurities and to this is added a very dilute solution of ferrocyanide (less than 1 per cent) to produce sufficient prussian blue to neutralize the discoloration of the remainder of the clay,

"We compiled voluminous statistics showing the production and deliveries of news-print paper, and have done so for several years past, and this data is all at your service.

"It is our earnest desire that this investigation of the newsprint manufacturing industry shall be so thorough and complete that it may not be necessary to make further investigations of this sort for some time to come, and to that end we tender you all of the facilities of our organization and hope that our assistance may facilitate the investigation both in the point of time and expense.

"I shall hold myself in readiness to respond to any invitation coming from the commission at any time, and will proceed to Washington at once on receipt of such invitation."—R. W. J.

Correspondence

The following correspondence which passed between Mr. E. B. Biggar and Mr. Watson Griffin has been sent the Pulp & Paper Magazine by the former. The letters are self-explanatory:—

RE THE MANUFACTURE OF PAPER FROM STRAW.

Ottawa, Ont., May 22, 1916.

E. B. Biggar, Esq.,
471 Marion Street,
Toronto, Ontario.

Dear Mr. Biggar:—

The Secretary of the Military Hospitals Commission, Edmonton, Alta., writes again in reference to the manufacture of paper from straw. He would like to get some information regarding the processes of manufacture and the machinery required. Do you know whether it would be possible to get the machinery for a twenty ton mill such as you referred to in your letter on the subject? Do you know whether paper is manufactured from straw anywhere in America or in any of the countries not now at war with the British Empire other than Norway and Sweden? I suppose it would be somewhat difficult to get information from Norway and Sweden at the present time.

Yours faithfully,

WATSON GRIFFIN,

Superintendent Commercial Intelligence Branch.

8th May, 1916.

Watson Griffin, Esq.,
136 Slater St.,
Ottawa, Ont.

Dear Mr. Griffin:—

In reply to yours of 5th I may say that the process of making straw paper is no cheaper than for other coarse papers, but a mill of a capacity of say twenty tons per day would be a feasible proposition, given the water supply, and an abundance of the raw straw within convenient hauling distance. Like the beet sugar business, the promoters would have to make sure of a sufficient supply of the straw for operation all the year round, and to this end freight rates ought to be reduced on this commodity. With the cheap coal of Edmonton for power purposes they would only need enough water for the purposes of the mill operations. A friend of mine who went into this some years ago figured that in an exclusively grain district there might be enough straw produced in a radius of ten to

twenty square miles to keep a 20 ton mill running. You will understand that on account of present freight rates, the only market for such product would be in the west, and that such paper would only be serviceable as building, breathing and straw board. There is a comparatively large demand for these kinds of paper in the west. Hitherto Germany has been the largest maker of straw paper — almost to the extent of a monopoly.

I think this will answer your correspondent's enquiry. Such a mill would not employ many hands, but it would fill a real local need.

With kind regards.

Yours truly,

May 25th, 1916.

Watson Griffin, Esq.,
Department of Trade and Commerce,
Ottawa, Ont.

Dear Mr. Griffin:—

Replying to yours of 22nd, I would advise your correspondents to write to the publishers of the Pulp & Paper Magazine, Read Bldg., Montreal, and they will send you a sample copy, containing the names of the leading paper machinery makers of the world. A recent number had an article on straw paper making. There is one straw paper mill in Canada, located at Campbellford. The machinery does not differ much from that required in ordinary lines. Booth's or Eddy's can give you an American Directory with addresses of U. S. straw paper mills. Hoping this will help your correspondents.

Yours truly,

KENOGAMI MILL MAKES PROGRESS.

With reference to Price Brothers & Co.' report to shareholders, which appeared in the last issue of the Pulp & Paper Magazine, it is interesting to note the President's remarks that their paper mill at Kenogami was largely responsible for the increased profits. When one considers that only four years ago that mill was in its construction stage, it seems remarkable that such a huge plant could be made into a going concern on an absolutely firm basis in so short a time. Yet it is not remarkable when one knows the man that is at the head of affairs there. The writer is pretty well acquainted with Kenogami Mill, which is equipped with 3-156" Fourdrinier machines, whose utmost production capacity was always considered 50 tons of newsprint per day. But during the past year, that mill's paper production averaged 162 tons a day; an abnormal increase for the type of machines in operation there. I have known the three machines to turn out 175 tons of newsprint in 24 hours, which is a production not equalled by any paper mill on this continent. The mill at Jonquiere has received special attention, and its production has been increased 50 per cent.

NEW OFFICES FOR PARKS.

Mr. George H. Parks has been elected vice-president of the North American Pulp and Paper Co., president of the Tidewater Paper Co., and general manufacturing manager of the subsidiary companies of the North American Pulp and Paper Companies.

The Campbellford, N.B., by-law authorizing the loan to the Northumberland Paper and Electric Company of the sum of \$30,000 to assist them in the rebuilding of their paper mills recently destroyed by fire, was carried by a very large majority.

The Federal Trade Commission and the Newsprint Manufacturers

(Special to Pulp and Paper Magazine).

Washington, D.C., May 25, 1916.

Much speculation is being made here as to whether the Federal Trade Commission will grant a hearing to the news print manufacturers in its investigation. It is anticipated, however, that the work of planning the investigation will be completed and laid before the commission this week.

G. Frank Steele, secretary of the News Print Manufacturers' Association has filed with the Commission a letter of information offering any assistance in his power in the investigation the Commission is planning to make in regard to production, consumption and price of news print paper.

"The News Print Manufacturers' Association," wrote Mr. Steele, "comprises practically all of the mills on the North American continent making news-print paper and selling it in the open market. I hand you herewith a list of all mills in the United States and Canada making news-print and hanging paper at the present time, and with the maximum daily productive capacity of each of these mills. Hanging paper is the paper which is used by the staining factories for the production of wall paper. It is practically the same quality as news-print paper, and a number of the mills making news-print paper also make hanging paper. For our statistical purposes it has been impossible for us to separate these two grades of paper, and we therefore include in our statistical tabulations the production of both grades of paper.

"You will observe in the attached tabulations that we show the mills which are members of this association and those which are not members of this association. The mills which are not members of this association may be roughly divided into four classes.

"First—Mills which make hanging paper exclusively. Second—Mills which are owned in whole or in part by newspapers, and which make news-print paper for the newspapers controlling these mills. Third—Small mills which make various grades of paper and incidentally make some news-print paper. Fourth—True news-print mills, which make news-print for the open market, and which are in the competitive field at all times.

"In view of the verbal statements made to you by the writer in Washington last Saturday, it is unnecessary for us to assure you that all of the facilities of this office are at your service. This association has a wide range of activities, as may be evidenced by the voluminous files of correspondence in our office, all of which are, of course, subject to the inspection of your representatives, and the writer will be very glad verbally to explain our large platform of activities and the additional activities which they have not yet been able to undertake, but which we have in mind.

The mills in the first class of non-members are the following:

	Maximum producing capacity.
Aldrich Paper Company	23 tons.
Defiance Paper Company. . . .	26 "
Fort Miller Pulp & Paper Co. . .	12 "
High Falls Pulp & Paper Co.. . .	24 "

Iroquois Pulp & Paper Co. . . .	52 "
Mason-Perkins Paper Co.. . . .	8 "
Marley Mills Corporation	22 "
Nassau Mills Corporation	15 "
Saxer Paper Company	12 "
Schroon River Pulp & Paper Co..	20 "

"The mills in the second class are the following:
Maximum producing capacity.

DeGrasse Paper Company	129 tons.
News Pulp & Paper Co.	30 "
Ontario Paper Company, Ltd. . .	120 "

"The mills in the third class are the following:
Maximum producing capacity

Alexandria Paper Company.. . .	35 tons.
Joseph Ford & Co...	10 "
Hawley Pulp & Paper Co.	14 "
Inland Empire Paper Co.	25 "
McArthur & Company, Ltd., Alex.	3 "
Malone Paper Company.. . . .	7 "
Rygate Paper Company	20 "
Stark Paper Company.	5 "

"The mills in the fourth class are the following:
Maximum producing capacity.

Great Northern Paper Company.	520 tons.
Tidewater Paper Mills Co. . . .	92 "

"It may be in order to state what maximum productive capacity means. This phrase is practically the ideal productive capacity and signifies that if a mill is provided with the most favorable orders on which to run, has no accidents, strikes, fires, or does not suffer from breakdowns of any kind, it can produce under the most favorable circumstances the amount of tonnage set opposite each mill in the tabulation submitted herewith.

"Experience has shown, however, that over an extended period, for a large number of mills, 93 per cent of maximum productive capacity is good average practice, and this 93 per cent of maximum productive capacity we call normal productive capacity. It is rarely the case that a large number of mills approximate maximum productive capacity for a period of one week.

"Quite a considerable number of the mills shown on the accompanying list make various grades of paper, and during the present time of high demand and high prices for other grades of paper, the production of these grades has been increased by these mills and the production of news-print paper correspondingly decreased.

"As you will note from the attached list, practically all of the potential manufacturers of news-print paper in Canada are members of this association, and I have been assured by the representatives of these companies that they will be delighted to give as full and complete information to the Federal Trade Commission as is submitted by their American competitors.

"As you will observe by the attached statement, all but two of the large mills making news-print paper on the continent are members of this association. These two mills are those enumerated in class four; so that practically 90 per cent of the tonnage turned out by the mills making news-print paper and selling it in the open market on the North American continent, is produced by mills who are members of this association.

THE DEMAND FOR NEWS PRINT HAS BEEN SO GREAT THAT EFFORTS ARE BEING MADE TO REDUCE ITS CONSUMPTION.

New York, N.Y., May 25, 1916.

The news print situation within the past few months has been one of the most serious which has ever confronted the industry. Beginning in November, 1915, the demand grew and by the end of December, reached enormous proportions. Generally, there is a lull in January and February, during which time the mills were accustomed to running up considerable stock for store. But this year, the demand continued through this time so that, instead of being able to put paper in the warehouse, the mills were constantly shipping. In March, when the usual spring demand came on, the mills had no stock from which to draw and a shortage resulted. To make matters worse, the freight congestion held up considerable stock in transit.

Before Easter, the advertising and the circulation in our newspapers reached a point which was the greatest ever recorded in the history of the country. The consequence was that the consumption of newsprint acted in proportion. The mills did their utmost to fill contracts, and even borrowed from each other to this end. But, even with all of this effort they barely succeeded in supplying the needs of the publishers. A few, who were not covered by contract were compelled to go into the open market and buy from second hands at greatly increased prices.

It was expected that immediately after Easter, advertising would decrease in volume and the consumption would ease up so as to relieve the situation. Thus far, there has been no noticeable relief, despite the many schemes to which the newspapers are resorting to conserve the supply of print papers.

At the recent annual convention of the American Newspaper Publishers' Association, the seriousness of the situation was made known, and it was agreed to use every means to bring about a reduction in news print. The following week, throughout New York City, the daily newspapers announced that they had discontinued the privilege whereby newsdealers were allowed to return unsold copies. This was done to avoid waste circulation and resulted in an immediate reduction in this city alone of 60 tons a day. Many other schemes were adopted to help along. Practically all of the papers took advantage of the situation to tell their "bad debt" advertisers that owing to the shortage of news print, they were compelled to reduce the size of the sheet, and therefore were curtailing the amount of advertising carried.

In some cities, it is understood, the price of the newspaper was raised from one cent to two cents. This was also another way of eliminating waste circulation. There was considerable talk in favor of this plan being carried out in Pennsylvania, but thus far nothing has materialized. One New York paper claims that it is actually running its machines slower in order to keep the quantity of "broke" as low as possible. Where formerly each employe of a newspaper received practically as many copies as he wanted, these have all been discontinued. The soiled copies, which formerly were thrown in with the mixed papers, are now kept to be sent to the foreign subscriber. No longer do the advertisers get as many papers as they wish. Instead a number of publishers are sending out press proofs of advertisements and one copy of the paper. Some of these plans may seem incredible, but they are being

practised assiduously. Thus far, however, the mills do not report an easing in the demand for news print, so it seems that the effects of this economy will not be noticeable for some time.

The only thing which can save trouble in the news print market is a diminution in the demand. As it is, inventories are as low as they have ever been and need replenishing sorely. The publishers predict that the fall will be even more active than the past few months. This means that the mills will have to find some way of storing large quantities of paper. If the demand continues through the summer, this will not be possible and the mills will once more be caught "short." Just now, everything is uncertain. The manufacturers feel that the apex of the demand has been reached and that, from now on, conditions will not be so congested.

Much credit is due to the mills of the United States and Canada for their good faith in not being tempted by the large export demand, but in working merely to supply the home needs. There has been an enormous demand from all ports of the globe for paper at any price, which would have netted large profits to the manufacturer, but this temptation was disregarded entirely.

R. W. J.

NEWFOUNDLAND NOTES.

St. John's, Nfld., May 23rd, 1916.

Saturday last was a red letter day for Heart's Content, the new shipping port of the Anglo-Newfoundland Dev. Co. On that day the first steamer arrived there, since the port has been made an exit for the company's output, to load paper.

Heart's Content—or the Cable Town, as it is more generally called—has been selected by the Anglo-Newfoundland Development Co., as its winter port owing to the ice conditions which during the winter and the early spring make entry to Botwood, the other shipping port of this Company, impossible. To fit Heart's Content for its new business a splendid and commodious pier was erected during the winter to facilitate transportation. And a short line of railway was constructed from the main line to the sheds where the paper and pulp are piled before shipment.

The S.S. Cranley which was the first steamer to arrive there was decorated with bunting for the occasion, and as she entered the harbor sent up rockets which were replied to by guns on shore. An entertainment was then given on board the S.S. Cranley in which many of the chief officials of the paper mills were present at, and a most enjoyable time was spent. Mr. W. E. Scott, the genial superintendent of the paper mills at Grand Falls was present at the occasion.

Heart's Content is the largest, deepest, and most commodious sea port on the east coast of Newfoundland. It is also an ice free port at all seasons of the year, and will be excellently suited for the enormously growing export paper trade that will in future be conducted via that port. Since 1858 it has been the terminus of an Atlantic Cable, in fact, the very first Transatlantic cable had its terminus here. It is still the most important cable town in the country, being the terminus of the Western Union Cable Co.

Activities in pit-props and pit-wood were never greater than now. Last spring at this time considerable ice was around the coast, and in consequence much delay was the result, and the great bulk of pit wood exports did not take place till comparatively late in the summer.

Ottawa Notes

Ottawa, Ont., May 25, 1916.

The case of the Canadian pulp and paper industry against the proposed increase of freight rates on pulp from points in Canada to points in the United States was heard by the Railway Commission at a sitting held here a week ago. Mr. T. J. Stevenson, representing the Riordon Pulp and Paper Company, Mr. H. F. Iverson, traffic manager of the Perkins-Goodwin Company of New York, and of the North American Pulp and Paper Company of Chicoutimi, and Mr. A. D. Huff, traffic manager for the Laurentide Pulp and Paper Company, presented the case for the pulp and paper men. They pointed out that the proposed advances would increase the cost of shipping wood-pulp from 30 to 40 per cent as compared with the tariffs prevailing before a general increase of 5 per cent was granted by the Interstate Commerce Commission on all rates in March of last year. As against the contention advanced by the railway representatives present that the new rates were largely in the nature of an equalization and that as a result of the changes rates from some points would be decreased, the pulp and paper men claimed that at the points where a reduction was put into effect practically no pulp was shipped and that even the present basis of arriving at pulp rates was high.

Both Mr. Stevenson and Mr. Iverson also presented a telling argument when they pointed out that the imposition of high freight rates would handicap Canadian pulp manufacturers in their efforts to capture the American market from Scandinavian exporters of the product. Mr. Stevenson also pointed out to the Commission that although pulp prices were now abnormally high, they were bound to drop at the end of the war when large stores of German and Austrian pulp and paper products would be released to flood the American and other markets. Mr. Iverson pointed out that the proposed rates on pulp were proportionately higher than those on first-class paper. The new tariff was based on a rate of 20.1 between Berlin and Chicago, and Mr. Iverson claimed that this was too high and that the basis of rates should be two cents lower than the rate on paper in Northern New York so that Canadian firms could compete. Berlin, he said, had nothing to do with the movement in other parts. Mr. Huff argued along the same lines and also pointed out that the railways had not claimed the present rates were unremunerative ones.

"That goes without saying," said Mr. Frank Watson, who with Mr. E. P. Flintoff and other argued the case for the railway companies, urging that the new rates had been decided upon to iron out inconsistencies in the old ones. Sir Henry Drayton, chairman of the Railway Board, however, seemed to be favorably impressed with the arguments of the pulp and paper men and declared that they seemed sound. Judgment was reserved.

Some radical economies, in lines with recent editorial suggestions by the Pulp & Paper Magazine, were recommended to Parliament on its closing day, Thursday last, by the Printing Committee in presenting a special report in that connection. The report, which was presented by Col. Hugh Clark, owner of the Kincairdine Review, was in part as follows: "The Printing Committee has been endeavoring to produce thrift by re-

ducing production — production in the amount of printing that is being done for the Government. We have had in mind the increasing cost and the increasing scarcity of paper, and we have been advised by the Minister of Trade and Commerce that in view of the shortage in the supply of white paper the public should be asked to conserve it as much as possible. I do not know of any place where this conservation could be carried into effect more than in these Parliament and Government buildings. We have entirely too many Government publications. They are altogether too large and the cost has gone up so tremendously that something has to be done in order to reduce it. The cost has more than quadrupled within the last fifteen or sixteen years." Col. Clark went on to point out that by rearrangement of forms and type in the case of certain blue books the Printing Bureau was recently able to put them into half the space they formerly occupied. He pointed out that the Department of Agriculture, after printing 110,000 copies of a certain periodical, had ascertained by means of return postcards that only 25,000 people wanted them, the balance being now waste paper. The Committee has accordingly recommended that the return postcard system be used by all departments; that mailing lists of departmental publications be frequently revised—some had not been revised since 1892, and that a board of editorial management be appointed to condense and revise all copy submitted for printing. The cost last year on account of typographical corrections of copy was something like \$48,000.

Parliament, during the last few days of its session passed legislation authorizing the Government to take over the Quebec and Saguenay, Quebec, Montmorency and Charlevoix and the Lotbiniere and Megantic railways. The first two are on the north shore of the St. Lawrence and the last is on the south shore. The Quebec and Saguenay is only partially finished and will be completed by the Government.

Although there has been considerable opposition to the purchase of the three roads on many grounds, it was urged by Sir Rodolphe Forget, who has been very prominently connected with the Quebec and Saguenay enterprise from its inception, that the completion of that particular road would provide a much needed facility to pulp and paper operators in that district. Sir Rodolphe stated: "The Mount Murray Pulp and Paper Mill Company, which is controlled exclusively by the New York World, has been established in that district. They have bought during the last four years in the county of Charlevoix, timber lands for which they have paid over \$600,000. For the last three years they have produced over 150,000 cords of pulpwood each year, but have not been able to get a cord of it out owing to the lack of railway facilities and harbor accommodation. They proceeded to spend their own money in making the necessary improvements and this year they will get out some." Sir Rodolphe added that the Baie St. Paul Lumber Company, in which capitalists in Syracuse, N.Y., have invested largely, had also secured some \$280,000 worth of limits in the same district. Although the company had spent large sums there it had become discouraged because of lack of facilities for transportation. Steamers could not approach near enough to the shore of the river at that point and to transport 60,000 cords of pulpwood in sailing schooners was, said Sir Rodolphe, a slow matter.

UNITED STATES NOTES

A new firm, of which C. E. Outterson is the leading spirit, has taken over the mill of the Union Paper Mill Company at Monongahela, Pa., and is now operating it, making kraft papers. J. W. Outterson is superintendent of the plant. Numerous repairs have been made, and the whole mill put in good condition. It is now equipped with steam and electric power, and has many new devices.

* * *

The Forest Service estimates that 37,013,294,000 board feet of lumber constituted the total cut in 1915 by the 29,941 mills presumed to have operated, of the 16,248 mills reporting to the Forest Service, 30,985,473,000 board feet of lumber were produced last year, and an estimate based on the operations of the reporting mills gives the above total cut.

* * *

The Cylinder Paper Company of Watertown, N.Y., have been sold to John H. Hahn, of Cleveland, O. The price said to have been paid for the real estate is \$125,000, and materials and supplies on hand will bring the total up to about \$145,000. This paper company had been in the hands of a receiver's committee composed of Frank L. Moore, of the Newton Falls Paper Company, W. W. Conde and F. L. Rogers, for a long time, and but recently was declared bankrupt. The purchaser has a plant at Cleveland, which manufactures corrugated paper boxes on a large scale, and he will use the output for his own material.

* * *

The Pejepscot Paper Company, of Brunswick, Me., has increased wages 10 per cent., to affect all the operatives employed in the six pulp and paper mills at Topsham, Pejepscot and Lisbon Falls. About 800 hands are affected. The announcement follows a long conference with a committee of 21 appointed by the operatives to take up the matter of an increase with the management.

* * *

Work has been started on the new extension of the Crescent Paper Company's plant at Marseilles, Ill., which will enable the company to double its output of thirty tone. The new machine room will be parallel to the present one, and will be 25 x 250 feet. In this room a 76-inch paper machine with six cylinders will be installed. A new boiler house and a new power house will be built. There will be electrical distribution of power, the electricity being generated by steam.

* * *

A report from Lady Smith, Wis., says that the sulphite mill of the Menasha Paper Company, at Ashland, which has been idle for upwards of two years, will resume operations in the near future. It is expected that necessary repairs and new installations will be made so that the mill will be in operation not later than June 20. Forty men will be employed.

* * *

The Wausau Sulphate Fibre Company, whose plant is located at Mosinee, has ordered a 1,000-kilowatt steam turbine, which will add twenty tons of pulp to the daily capacity of the plant. The turbine is being manufactured in Schenectady, N.Y., and will be shipped in a short time.

The National Paper Products Company, which recently took over the manufacturing department of the Zellerbach Paper Company, of San Francisco, Cal., will shortly build a large modern factory and warehouse to replace the present factory now used by both companies. The company, it is stated, will sell only to jobbers. During the past year, it has built up a very large business on the paper towels manufactured in San Francisco and in Carthage, N.Y.

* * *

It is reported that W. P. Hawlet, president of the Hawlet Pulp and Paper Company, of Oregon City, Ore., is developing magnesite deposits in California in order to secure materials for use in his company's sulphite mills.

* * *

The Hoberg Paper Company, of Green Bay, Wis., has decided to extend its plant by the addition of another large building, and the installation of another paper machine. Work on the building will be started by June 1. The new machine will be the fifth in the big plant of the Hoberg Company. It will be installed in the building erected about a year ago, which was built to accommodate two machines, only one of which was installed at that time.

* * *

Dr. Thomas H. Norton, the dyestuff specialist of the Department of Commerce, is engaged in compiling a most interesting statistical report of the dyestuff consumption of the United States. He has gone through various dyes that have come into the country in the past, so that domestic manufacturers may be able to estimate about how many pounds of dyes have been used.

* * *

W. A. Brazeau, secretary of the Inland Empire Paper Company, of Spokane, Wash., who has been in charge of the company's San Francisco sales office during the past year, recently left for the plant at Spokane, where he will remain permanently.

* * *

Plans have been completed and work will soon be started on a \$35,000 board mill and power plant for the Frank P. Miller Paper Company of East Downingtown, Pa. The machinery installations will be: One 120-inch board machine, one 2,000-pound beater and three 800-pound beaters. It is hoped to have the machines in operation on box boards late in the fall of his year.

* * *

The new evaporating plant installed by the Penobscot Chemical Fibre Company at Great Works, Me., has been working very satisfactorily. The builders of this apparatus advise that it contains improvements in the methods of handling caustic soda from electrolytic cells, and has been designed for the special purpose of operation in conjunction with the Larchar cell.

* * *

The combined Locks Paper Company has sold its big paper, pulp and sulphite plant at Combined Locks, Wis., to George M. Seaman, of the Birmingham-Seaman Company, paper dealers, Chicago, Ill., for \$600,000.

PULP AND PAPER NEWS



The mill of the Northumberland Paper and Electric Co., located at Campbellford, Ont., which was destroyed by fire some months ago, will be rebuilt on a larger and more up to date scale. A by-law was recently carried by the rate-payers of Campbellford, authorizing a loan of thirty thousand dollars to the company, who will make straw, filled and pulp board, binders board and tarred and plain sheathing. Work on the new structure will be rushed.

Construction is now proceeding rapidly on the new sulphite plant of the Ontario Paper Co., at Thorold, Ont., and it is expected that the same will be in operation some time in October. The mill will have a capacity of fifty tons a day and will be built of steel, concrete and brick. There will be two digesters, each 15 feet in diameter and 49 feet in height which are being built by the Chicago Bridge and Iron Works at their Canadian plant in Bridgeburg, Ont. A third paper machine will also be installed at the plant. It will be 162 inches wide and is being built by the Pusey Jones & Co., of Wilmington, Del. It will be in operation some time during the coming winter. The Ontario Paper Co. have also placed an order with J. H. Horne and Sons Co., Lawrence, Mass., for a 104 inch cylinder wrapping machine which the company expects to start running late this fall.

The extension to the plant of the Riordon Pulp and Paper Co., at Merritton, Ont., and the installing of the bleaching equipment is proceeding well. All the output of the mill will be bleached electrolytically. The improvements will cost about one hundred and fifty thousand dollars, and a superior grade of strong bleached sulphite will be put on the market in August next. The new rossing plant of the company at Haileybury, Ont., has been installed and is now in operation. About twenty thousand cords of pulp wood will be barked annually for the sulphite plant at Merritton.

C. E. Read, secretary-treasurer of the Riordon Pulp and Paper Co., Montreal, spent a few days in Toronto and Merritton last week on business.

The capital stock of the Monteith Pulp and Timber Co. has been increased from forty to one hundred thousand dollars by the creation of six hundred shares of new stock at one hundred dollars each. By supplementary letters patent the company is empowered to convert four hundred shares of the capital stock into preference shares and there shall be no distribution of dividends on the common shares until the holders of the preference shares have received a dividend amounting to six per cent per annum upon the dividend reaching six per cent, the preference shares shall cease and be converted into fully paid-up common shares of the company.

At the annual meeting of the Toronto Paper Mfg. Co., Limited, held in Toronto on May 19th., R. S. Waldie was re-elected President; W. J. Sheppard, Vice-President, and A. W. Briggs, Secretary. The di-

rectors were also re-elected as follows: Rev. Dr. William Briggs, T. Albert Brown, R. A. Lyon and T. H. Watson. The company have inaugurated the three tour system in both the paper mill and the sulphite plant at Cornwall, and, have orders on the books which will keep the industry fully employed for several months.

A charter has been granted to the National Wood Manufacturing Co., with charters at South River, Ont., and a share capital of \$125,000. Among the incorporators are Wm. J. Ard, Clinton A. Jackman, Albert Howard and others of South River. The company is empowered to carry on in all its branches a lumber, timber and pulp wood business, both manufacturing and mercantile.

The plant of Miller Bros Co., Limited, at Glen Miller, Ont., which was visited by fire some months ago, has been completely overhauled and re-equipped and the company are again making straw and wood pulp board and straw and wood board egg fillers.

Edwin Crabtree and Sons, Limited, Crabtree Mills, Que., are building a new concrete dam which will greatly increase their power. Good progress is being made on the construction.

The new extension to the Donnacona Paper Co., at Donnacona, Que., has been completed and the work of installing a second news-print machine which will double the output of the company will now be proceeded with.

The ground wood plant at Thorold, formerly operated by the Colonial Wood Products Co., and latterly by the Inland Pulp and Paper Co., is once more in operation, having been leased by the Peerless Pulp and Paper Co. The company have a large number of orders on hand and the town of Thorold is pleased to see the industry running again. Herman M. Rieber, of Niagara Falls, N.Y., is the President of the Peerless Co., E. P. Foley, of Thorold, Vice-President and General Manager, and H. A. Constantine, of Niagara Falls, N.Y., Secretary-Treasurer. The plant has four grinders and eight wet machines and an output of about thirty tons a day.

C. C. Hockley has been made manager of the manufacturing department of the St. Maurice Paper Co., of Cap Madeline, Que., where a news-print mill, a kraft mill and a sulphite plant are being erected. Mr. Hockley was formerly in charge of the engineering department of the Union Bag and Paper Co.

The Ontario Paper Co., Limited, of Thorold, Ont., are building a timber crib dock in the gulf of the St. Lawrence extending south easterly from a five acre island lying south of the mainland opposite a point between the western outlet of the Rocky river and the outlet to the east. The dock will be about four hundred feet long and will be used for loading pulp wood. It will allow of the loading of vessels drawing from fourteen to eighteen feet of water in low tide.

Good progress is being made on the extension to the Interlake Tissue Mills at Merritton, Ont. The addition is 148 feet long by 72 wide, and three storeys high. The walls are now up as far as the third storey. They are being built of re-inforced concrete with brick curtain walls. It is expected that the structure will be completed by July 1st. The Interlake Tissue Mills are rushed with orders and started the three tour system recently.

A meeting of the executive of the Canadian Pulp and Paper Association will be held in Toronto on Monday, June 12th. A session of the Transportation Committee will be held on the same day to meet J. E. Walsh, traffic manager of the Canadian Manufacturers' Association, when the matter of the proper classification of rates and the adoption of a new tariff on paper and paper articles will be taken up, with a view to presentation to the Dominion Railway Board. At present there are many anomalies in the classification and commodity charges, which it is hoped to have straightened out particularly in the matter of trans-continental rates.

George H. Mead, of Akron, Ohio, President of the Spanish River Pulp and Paper Mills Co., Limited, has taken a residence in Sault Ste. Marie, Ont., having leased the house of Lieut.-Col. P. T. Rowland. It is reported that the Lake Superior Division of the company will shortly instal a cylinder wrapping machine. W. N. Hurlbut, who has been assistant to C. H. L. Jones, late manager of the company, has been appointed assistant to the President, and has entered upon his new duties. Lieut.-Col. Jones, who is the officer commanding the 257th Battalion, C.E.F. has resigned his position with the company in order to do his bit for King and Empire in the present struggle.

As a result of recent interviews between the Hon. Francis M. Hugo, of Watertown, N.Y., secretary of the Remington Pulp and Paper Co., who is also Secretary of State for New York, and the Ontario Motor League, the Ontario government has arranged for an interchange of motor licenses between the States of New York and Michigan. The interchange will be free for a period of twenty-one days. It is expected that the new arrangement will be a great boon to the tourist interests.

An interesting case was recently heard in Toronto in which the Phoenix Lithographing Co. entered suit against Charles E. Racine to recover one hundred and fifty dollars for printing stickers, on which was designed the cross flags of Great Britain and France, with the inscription "United; Canada's Security." The vertical blue color should have been next to the flag staff, the colors being blue, white and red. Instead the colors were printed red, white and blue, the vertical band of red appearing next to the flag staff. The defendant contended that this was an unpardonable error and refused to pay for the stickers. The lithographing company sought to recover through the courts. Justice MacLennan adjudged that the faulty representation destroyed the value of the stickers for the trading purposes for which they were intended. The action was dismissed.

The contract for the new sulphite mill of the Matagami Pulp and Paper Co. at Smooth Rock Falls, Ont., has been let to Morrow and Beatty, Limited, of Peterborough, Ont., who have the contract for the power house, the concrete dam and the three mile spur line of railway. This firm also built the mill of the Ab-

itibi Power and Paper Co. There are now about four hundred men employed at Smooth Rock Falls and construction has been started on the power house, dam and mill. It is hoped to have the latter in operation by the middle of summer next year. The organization of the company has been completed and the following are the officers: President, Duncan Chisholm, Toronto; Vice-President, E. P. Shove, Colorado Springs, Col.; Secretary-Treasurer, Lieut.-Col. D. M. Robertson, Toronto; General Manager, A. G. McIntyre, Toronto; Managing Director, Duncan Chisholm. The directors of the company are: E. P. Shove, Colorado Springs, Col.; Duncan Chisholm, Toronto; N. Bruce MacKelvie, New York; W. D. Ross, Toronto, and Lieut.-Col. D. M. Robertson, Toronto. The authorized capital of the company is four million dollars divided into twenty thousand, seven per cent, cumulative preference shares and twenty thousand common shares. The directors of the company are among the largest shareholders, each having direct financial interest. The financial arrangement have all been made. There will be no public offering of the securities and everything in the line of organization, an experienced and efficient staff, and construction work is now well under way.

George H. Popham, Limited, Ottawa, with a capital stock of forty five thousand dollars, has been incorporated to carry on the business of printing, publishing, engraving and book-binding.

Excavation work has been commenced for the new paper and sulphite mill of the St. Lawrence Maurice Paper Co., at Cap Madeline, Que. The contract has been awarded to George A. Fuller & Co., of Montreal.

Price Bros. are strongly considering the installation of a fourth paper machine at Kenogami Mills, which will probably be installed in the near future.

DE WOLF REID RETURNS.

C. DeWolf Reid, who has been spending the past few months at Buenos Aires, South America, and in New York, in the interest of the export paper trade, representing several Canadian firms, recently returned to Montreal.

Mr. Reid reports that there is a good demand for book, bond writing and ledger paper in the Argentine Republic, and that the people there like to do business with Canadians. Owing to so many mills in Canada being rushed to the limit with domestic orders at the present time, no large contracts can be taken aboard for shipment to South America. Mr. Reid reports that the prospect of the paper market in Buenos Aires is very good, and, when supplies can be obtained, he expects to do considerable trade with the connections that he has formed. He speaks in the highest terms of the business men of Buenos Aires, and found them progressive and wide awake. To really capture a big share of the South American trade Canada should establish direct steamship connections and also establish branches of our banks in the leading cities of the Southern Hemisphere.

According to officials at the Forest Service, the waste product of sawmills in the United States, including that fed to the furnaces as fuel, is estimated to be 36,000,000 cords per year, and the equivalent of 2,880,000,000 cubic feet of solid wood substance. About half of it has no use whatever, but is usually burned to get rid of it.

Canadian Wire Committee Confers with Body in New York City

New York, N.Y., May 26, 1916.

A very important meeting was held in New York City recently, at the rooms of the American Paper and Pulp Association, between the Wire Committee and a committee from the Canadian Paper and Pulp Association. The question of a proper supply of wires was discussed at length, but no material step was taken to relieve the situation for the present.

The manufacturers in the United States realize how serious is the question of getting Fourdrinier wires for the Canadian mills, and, if it were possible, there is no doubt that they would do all in their power to be of some assistance. But, the same situation which prevails in Canada, is, to a great extent, current in this country.

Most likely, the two associations will work together in an effort to find a solution for the problem, but it is somewhat uncertain as to whether or not they will be able to accomplish anything of real value. The manufacturers of wires all over the United States are operating their looms at full capacity. Several of these concerns have installed a number of new looms, all of which are now running with all possible speed. However, the demand has been so great that there appears to be absolutely no hope that it will be supplied. In the first place, the life of the average wire has been curtailed considerably since the paper mills have been running their machines continuously day and night. This means that the mills have been consuming more wires than usual. It is also true that a number of paper men have foreseen this situation and have attempted to cover up by ordering more than their immediate needs. Business of this kind has helped along in the acceleration of the situation.

Perhaps one of the most important phases in the wire situation has been the fact that the foreign supply has been practically shut out since the start of the war. It is well known that foreign makers of wires have always sold considerably of their product in this country. Now, however, the entire demand has fallen upon the shoulders of the domestic manufacturers. To the credit of these men, they have done all in their power to keep matters from becoming serious. Naturally, their first care has been for their regular customers, but, where possible, they have shown a disposition to help the rest.

Some wires which sold formerly at about 28c are now hard to obtain at 54c. No doubt, this is due, aside from the great demand, to the incredible increase in the cost of the materials used for manufacture. Copper, for example, for which 13c is a high-mark in normal times, is to-day above 35c and is going higher. Brass and the other materials have been acting in the same way.

While the situation in the United States may be considered very bad, it can hardly compare with that in Canada. The Canadian mills have relied on foreign sources of supply for their wires to a greater extent than have those in this country and, as a result, are to-day depending, to a certain stage, on what they can obtain from the United States. This, of course, is very precarious.

It is known that the American Paper and Pulp Association has been in communication with several

manufacturers of wires. But, thus far, there has been no possibility of doing anything. The wire men are doing their best to catch up with their orders, in which they are as much as four months behind. From exports, there are a number of mills which are to-day in danger of being compelled to shut down temporarily in the immediate future, if they do not secure their supplies of wires.

R. W. J.

The Investigation of the News Industry Progressing

(Special to Pulp and Paper Magazine).

New York, N.Y., May 26, 1916.

Nothing material has thus far developed in the investigation of the News Print Industry which is being conducted by the Federal Commission. Last week, Secretary George F. Steele, of the News-Print Manufacturers' Association visited the commission in Washington and expressed his willingness to do anything in his power to facilitate the progress of the investigation. He prepared a long letter in which he gave a list of all of the makers of news print in the United States, including all of those which were members of his organization and also those who were not. The statement also contained figures showing the capacity of each plant mentioned. At the office of the News-Print Manufacturers' Association, everything is in readiness to give information of every possible kind to the Federal Trade Commission.

From Washington, this week, comes the news that Dr. F. W. Walker, chief economist of the Federal Trade Commission, who has been working on a plan of action for the conduct of the investigation has completed an outline which is to be considered by the body early during the coming week. It is understood that his plan involves sending out lists of questions to the various mills for obtaining certain information which is needed in the work. It is also possible that the plan will call for the sending of special agents into some of the cities wherein complaint has been found, to ascertain the true condition of affairs.

The commission will look into the price of news which prevailed last year and compare it with the price now being asked. Investigation will be made to see whether any advances are justified and whether or not there has been and discrimination by any of the mills in selling to some of the larger newspapers. It is thought probably that the care of the investigation will be entrusted to Commissioner William H. Parry, who has been at the head of the lumber work.

Late reports from the headquarters of the commission show that new complaints have been made because of the prices now being asked and which are characterized as being ridiculously high.

Until the plan of the commission has been actually decided upon and made known, little progress can be expected during the course of the inquiry. Thus far, all of the news print manufacturers are waiting eagerly for an opportunity to testify and to give whatever information may be needed in the work. Mr. Steele, for the News-Print Manufacturers' Association, has time and time again, expressed himself as being eager to aid the investigation, being anxious to have the truth of the affair known to the public so that the unjust criticism of the news men, which has been so prominent in the press, of late, would be repudiated.

Late reports from the office of the News-Print Manufacturers' Association show that despite the fact that

its members might easily turn their machines to run on some more profitable grades of paper, there has been no attempt to do this. On the contrary, the mills have been operating at capacity, trying to fulfill all obligations — many at heavy losses — unmindful of the temptations which surrounded them. Despite all efforts made by the newspaper publishers to reduce consumption, it is understood that the demand is just as strong and voluminous to-day as it was a month ago.—R. W. J.

c A Lock-out has been Declared in Norway

(Special to Pulp and Paper Magazine).

New York, N.Y., May 26, 1916.

The chemical pulp situation has been strengthened during the past week by despatches received from Norway stating that the mill owners had decided on a general lock-out, which was to take place on June 3. There has been considerable labor trouble for some time past, in Norway, and, according to the latest cables, the pulp producers have finally decided on the lock-out and have placed posters about in their plants announcing this decision. The report of this action was first heard late last week, but it was considered rather vague. It was to the effect that 70,000 workmen were locked-out. However, as there are about 400,000 workmen in Norway, it was believed possible that the pulp mills had escaped the trouble, but there is now no doubt as to the real situation.

While the chemical pulp market strengthened materially when the first reports were received, there is considerable likelihood that the lock-out will be avoided. The fact is that a number of the better-informed importers in this city are inclined to believe that before June 3, an agreement will have been reached. They feel this way because it is understood that the Government is expected to insist on arbitration and are confident that it will succeed in this purpose.

However, as it always the case, the market does not await the final outcome but acts on the information available. Norway has been our largest foreign source of supply for bleached sulphite. In the event that the lock-out should become a real lock-out should become a reality, bleached sulphite will become so costly that it will be absolutely prohibitive. Aside from this, Norway has been shipping some unbleached sulphite and some kraft pulp.

The situation has been made more serious by the information just received through secret but reliable channels that England and Sweden have just arranged upon some sort of an arrangement whereby they had settled all of their differences. These negotiations have been going on for some time, and, according to the information available, have just been successfully closed. It is believed that now, England will allow Sweden to have whatever coal she needs and that Sweden in turn, will change her policy with regard to her embargo on chemical pulp. Thus far, the idea has been that, with England out of the Swedish market, there would be just so much more pulp to come to the United States. However, in England, which has been doing everything possible to get enough pulp from Norway, changes her tactics and acts in a like manner with Sweden, then the market is bound to get much

firmer and go higher, and the possibilities of getting pulp into this country will have been decreased considerably. Not only will the pulp market be affected, but ground wood, rags, waste papers—in fact, any sort of material which is suitable for paper making, will be forced higher, for there will be a big demand for substitutes for sulphites — a bigger demand than that which has prevailed at any time during the past few months.

The opportunity for Canada, at this particular time is of unusual moment. During the next month, an added tonnage of chemical pulp from Canada is expected on the market. This will undoubtedly be taken up the moment it is available. Many consumers of pulp are stout in their maintenance that the United States should reach some sort of an agreement with Canada which will eliminate the necessity of relying so much on foreign sources of supply for chemical pulp.—R. W. J.

England has Embargoed Bagging and Rope

(Special to Pulp and Paper Magazine).

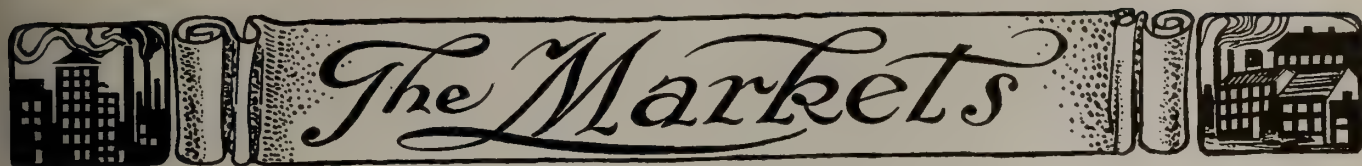
New York, N.Y., May 26, 1916.

Cable advices were received by various concerns during the early part of last week announcing that England has placed an embargo on bagging, rope, thread and flax waste. For a while, there was doubt as to whether or not there was any real cause for these cables, but later messages confirmed any fears which may have been laid. The result of the news was that bagging and rope, both of which had been somewhat inactive and were declining in price, braced and showed an inclination to rise.

At the time of this writing, it is understood that Great Britain intends to allow the commodities in question to be exported under license. One cable states that the government has taken the shipping of these goods in hand and will formulate regulations regarding their export. However, many of the local importers are somewhat sceptical as to receiving licenses. They believe that if the embargo has really been declared, there is little hope for receiving any bagging or rope from England.

Before the war, Germany was our largest source of supply for bagging, but since it was declared, we have received the biggest portion of our bagging from England. Great Britain is also our chief supply for rope. To eliminate this source from our market would inevitably cause somewhat of a shortage which would be accompanied by fairly high prices. At the present time, it is understood that rope has already become a bit more active and cannot be bought for less than 5c. Other reports are to the effect that a number of dealers, fearing the worst in bagging, are now making several efforts to get hold of all the bagging stock which is available and have been paying fairly good prices for it.—R. W. J.

It is rumored that Jos. J. Slater has resigned as General Superintendent of the Espanola and Sturgeon Falls Mills of the Spanish River Pulp and Paper Mills.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

decidedly of value, for perilous fires are obviated and arena although there is not the frenzied clamor for rush orders that there has been for some time. Still the number of inquiries continues and a busy summer is promised for all plants. Prices are strengthening all the time and while supplies in the rag and waste paper requirements are now abundant, there are shortages in other commodities which are causing the mills considerable anxiety.

News-print continues to be very strong and prices are now higher than they have been for some time. In rolls, the figure at the mill is around two forty and even two fifty has been obtained. In sheets, by the car load lot, the quotation, which went into effect during the past week, is two seventy-five; three cents for two ton lots, and three and a quarter for less than two tons. Some of the large plants are said to be running behind in production or, in other words, they have taken aboard more orders than they can fill and publishers have been demanding shipments to hold in reserve in case of a shortage. This has taken up any surplus stock.

Book and writing mills are rushed to capacity and have orders covering the next two and three months. The high prices are now being paid freely by clients and no complaint is made. It has been charged by certain publishers that Canadian plants have been exporting, but this is denied by all the manufacturers, who, with the exception of some small shipments to South America several months ago, have not sent a pound of paper out of the country. Even when the mills a few months since were running only five days a week, they confined selling to the Canadian trade and have always done an export business to the detriment of Canadian houses and consumers.

One leading member of the trade makes the charge that Canadian publishers and printers recently sold their waste trimmings and shavings to United States firms even when Canadian paper making industries were scouring the country for such materials and offering top notch figures for the same.

It is true that Canada exports about eighty per cent of its news-print paper, but this is rendered necessary by the fact that local consumption of the two thousand and produced daily, amounts to only about twenty per cent of the output. Canadian publishers have always been given first consideration even in this line of paper.

The returns for the last fiscal year show that the export business in news-print totalled \$17,974,292, which represents an increase of \$3,882,630 within the year. Five years ago the total export of Canadian news-print was \$3,092,437 or less than the amount of the past year's increase in the trade. The shipment of news-print abroad, in March last was \$2,053,887, the largest month ever known in the history of the Dominion. In March the export of sulphite pulp was \$837,831 which also constitutes a record. The total

shipment for the last fiscal year was \$6,801,011 as compared with \$4,806,622 the previous fiscal year. In ground wood there was shipped during the last fiscal year \$3,775,537 as compared with \$4,459,539 in the previous twelve months. The figure for March was \$448,623, which next to January, October and July was the largest in the year.

A recent bulletin, in reviewing the news-print situation, says that the scarcity of labor, the increase in wages and the advance in price of coal as well as the dearth of ocean tonnage and the prevailing freight congestion, altogether aid in the complication of the market. The scarcity of workers brought about by the heavy enlistments in Canada since the war began, has caused the price of pulp wood to increase from two to three dollars per cord, which in turn affects the price of paper from three dollars to four dollars per ton. Coal used by paper manufacturers has advanced from ninety cents per ton up, which also means an increase in the figure of paper from one to two dollars per ton. Woolen and cotton felts have jumped fifteen per cent.

The following table shows the increase in prices paid a year ago compared with those that now prevail:

	1914.	1915.	Increase P.C.
Alum, pound . . . . .	.01	.045	300.0
Bleach, pound . . . . .	.011½	.10¾	366.0
Fourdrinier wires, square foot . . . . .	.29	.39	34.4
Lumber, M. ft.	13.00	18.50	42.3
Bleached sulphite, cwt. . .	2.65	4.50	50.9
Thirds and blues, rags, cwt.	1.35	2.12½	74.0
Aniline, pound . . . . .	.40	20.00	4900.0
Soda ash, cwt. . . . .	.65	4.00	58.4
Magazine stock, cwt. . . .	1.00	1.35	35.0
Rosin, barrel	3.75	5.70	73.0
Satin, white, dry, pound . .	.05	.09	80.0
Casein, pound . . . . .	.061½	.30	253.0

The paper committee of the Canadian Press Association who have inquired into the news-print situation, make some interesting observations which will go before the annual gathering in Toronto this week. The report says that the present shortage is due to the abnormal volume of advertising, and consequently the increased size of papers, particularly in the United States during the first four months of 1916, and the failure to provide for it by building up reserves during the comparatively dull months of 1915. Thus the mills themselves have created the shortage by producing during 1915 less than they should have produced, or doubtless would have produced, had they foreseen the heavy demands during the early months of 1916. The committee believes that there is every possibility of the present situation completely adjusting itself before the close of the present year. As is the case every summer there is certain to be a very considerable falling off in advertising and hence in consumption in news-print during the summer months. The demands upon the mills instead of depleting their reserve stocks will be

greatly reduced so as to enable them to gradually replace those reserves and, by the fall of this year, the committee are of the opinion that any apparent cause for anxiety that exists at present will have greatly diminished.

The committee concludes that no reasonable justification exists for any increase in news-print prices that may be urged by the mills "in view of present situation," and so far as the committee are able to judge, members will be well advised to defer making new contracts at the present time if higher prices are asked.

It is pointed out that many newspapers have effected a saving by reducing the margins, narrowing the width of the columns, keeping a careful record of and reducing press room waste, eliminating agencies and dead-heads, eliminating returns or limiting the same, and using such returns for the mailing of marked or sample copies to advertisers on the day after publication.

More general attention to the questions of eliminating paper waste and reducing paper consumption by means of mechanical changes is urged, and it is also recommended that greater attention be devoted to paper matters in future by the association, and that waste bulletins be resumed at as early a date as possible and all members give their hearty support and co-operation in making reports of press room waste for publication in these bulletins.

Sulphite pulp continues to advance in price and several hundred tons have been sold as high as eighty dollars at the mill while in smaller lots as much as eighty-five dollars has been obtained, which means that this commodity has doubled in price within the last six months. How much higher it will go, no one can foretell. Mills are well sold up and the foreign market shows but little evidence of affording any relief. Unbleached sulphite is bringing around one hundred and forty a ton. Kraft pulp keeps soaring and so do kraft prices. It would not surprise the trade to see kraft mount to ten cents before many weeks have passed.

There have been changes in the discount in paper bags of all kinds while the quotation for board of every kind keeps up strong and paper box makers are finding it difficult to get supplies.

Coating paper plants were never busier and find it bothersome to get sufficient raw stock. The mills are working over-time. It is interesting in this connection to note, that the first coating paper plant established in Canada at New Toronto, by Ritchie and Ramsay, has been in operation twenty-five years, and its output to-day is over four times what it was a quarter of a century ago, notwithstanding that four other mills have since been put in commission in the Dominion. They are all rushed to the limit with business, with prices a cent and a half higher and even more on certain lines than they were a few months ago.

One of the leading paper mills recently issued an interesting circular to the trade reviewing the conditions prevailing which make it impossible to name any definite date of delivery in any line of goods. The reasons set forth are applicable to all plants just at the present time and are as follows:

"We were fortunate in being able to book our contracts for two of the most important items in our raw material. We based these contracts on the quantity consumed during 1915. Our contracts call for a specific quantity delivered monthly; our demands for these

lines have so far exceeded these specifications that we have been compelled to buy large quantities in the open market at enormously increased prices, in some cases they have been at almost double former prices.

"In other lines we were not fortunate enough to be able to make contracts and are compelled to purchase at the constantly advancing prices, and coupled with the tremendous advance in price, is the fact that we can never be sure that we will have reasonably prompt delivery of the stock, and at the present time we are out of stock in one line of pulp ordered two months ago, and for the past three months have found it almost impossible to secure sufficient stock from the pulp mills to enable us to keep our plant in operation.

"We are doing our best to overcome these and many other troubles which enter into the daily operating menu of the paper manufacturer, and we are using our best endeavor to give our customers as prompt delivery as it is possible for us to give them. Under existing conditions we would say DON'T ask for specific date of delivery, for even were we to name a date we could not be sure of being able to fulfill that promise, therefore cannot make a definite promise, and the most that we can say is that we will do the very best we can to give you prompt delivery."

The color situation has become so acute there is a possibility that street car tickets in Toronto, Montreal, Winnipeg, and other large cities may all have to be printed on white stock. There is a great scarcity of red, green, blue and yellow dyes.

New price lists have been issued by wall paper manufacturers and the discounts have been decreased. The new lists went into effect last week.

The recent public campaign conducted through the Trade and Commerce department, urging people to save their rags and waste paper has had a very good effect in replenishing stocks in all lines of waste. In one small town in western Ontario during one week eleven tons of paper and rags were gathered and the sum of three hundred dollars was realized. In one day the receipts in Hamilton were \$1,800. The waste paper market is now hanging in the air, according to one large dealer, and conditions are not stable. The demand for roofing rags has fallen off and the mills are not anxious for stock. The price for new cottons has dropped slightly while folded news and over issues have fallen about five cents in price.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls), \$2.40 up, at mill, in carload lots.
 News (sheets), \$2.75 up, at mill, in carload lots.
 Book papers (carload), No. 3, 5.50c.
 Book papers (ton lots), No. 3, 5.50c to 6.25c.
 Book papers (carload), No. 2, 6.50c to 7.00c.
 Book papers (ton lots), No. 2, 6.75c to 7.25c.
 Book papers (carload), No. 1, 7.00c to 7.50c.
 Book papers (ton lots), No. 1, 7.25c to 7.75c.
 Sulphite bonds, 8c to 9½c.
 Writings, 7c up.
 Grey Browns, \$3.25 to \$4.50.
 Fibre, \$5.00 to \$6.00.
 Manila No. 1, \$5.00 to \$6.00.
 Manila No. 2, \$4.25 to \$4.75.
 Manila, B., \$4.00 to \$4.50.
 Unglazed Kraft, \$7.50 to \$9.00.
 Glazed Kraft, \$8.00 to \$9.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, unbleached, 75c to 1.00c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.

Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 50c.
 Paper bags, kraft, 35 discount.
 Confectionery bags, 25 discount.

Pulp.

Ground wood, \$22 to \$26.
 Ground woodpulp (at mill) \$18 to \$20.
 Easy Bleaching Sulphite, \$80 up.
 Sulphite, news grade, \$70 up.
 Sulphite (bleached), delivered, \$1.30 up.
 Sulphate, delivered, \$85 up.

Paper Stock.

No. 1 hard shavings, \$3.25.
 No. 1 soft white shavings, \$2.75.
 No. 1 mixed shavings, 65c.
 White blanks, \$1.10.
 Heavy ledger stock, \$2.25.
 No. 2 book stock, \$1.00.
 No. 1 book stock, \$1.50.
 No. 1 Manila envelope cuttings, \$1.60.
 No. 1 print Manilas, \$1.50.
 No. 1 print Manilas, 80c.
 Folded news, 65c.
 Over issues, 65c.
 Folded news, 70c.
 Over issues, 70c.
 No. 1 clean mixed paper, 50c.
 Old white cotton, \$4.50.
 Thirds and blues, \$2.75.
 No. 1 white shirt cuttings, \$7.25.
 Black overall cuttings, \$2.50.
 New light flannelettes, \$5.25.
 Ordinary satinets, \$1.75.
 Flock, \$1.90.
 Tailor Rags, \$1.65.

NEW YORK MARKETS.

New York, N.Y., May 26, 1916.

Ground wood reports continue very encouraging. The demand has been much larger than usual at this time of the year, and appears to be growing. The fact is that considerable fear has been expressed that there would possibly be a shortage of pulp in the summer. This has been based on the fact that most of the grinders had already contracted ahead for their production, and that there was now no abundance of pulp being offered. Now, that the scarcity of sulphite seems destined to continue, there is every reason to believe that the consumption of ground wood will increase somewhat, for efforts will be exerted to substitute it for sulphite, as much as possible, wherever possible. Just now, the grinders throughout the country are running at full capacity. However, the consumers of ground wood are all rushed with business, turning out a maximum output, with enough orders on their books to insure that they will continue to do so for at least 3 months more. If a dry spell should set in during the summer it will force the price of ground wood very high, for it will compel a few machines to shut down on account of poor water conditions, and any curtailing of production will be severely felt. The present prices on ground wood are about \$18.00 to \$19.25, f.o.b. at the pulp mill, and dependent largely on the location of the pulp mill.

Chemical pulp has become stronger, during the past two weeks than has ever been believed possible. Imports have dropped off to such an alarming extent that the stocks which are on dock are now nearly exhaust-

ed. As one importer remarked, "The situation would not be helped much even if the imports were larger, for they are all coming over on contract, and going right into consumption." A number of the mills have been holding out of the market, believing that considerable pulp would arrive from Sweden in May, and that quotations might show some signs of easing. But there have not even been indications that such is possible. Although the Baltic Sea is open, no pulp has been received from Sweden, and, thus far, no advices have been received stating that any large shipments were either afloat or were scheduled to be sent out. Conditions abroad are very firm. Many concerns, even the importers, believed a month or so ago, when high quotations for open water shipment were received from Scandinavia, that the pulp producers were merely trying to "feel" the market, and get the most there was in it. However, the advices received during the past few days, have changed all ideas in regard to this matter, for it now appears obvious that the Swedes are determined to get their high prices, and that if America will not pay them, there is sufficient market in Europe to overcome this difficulty. Importers here believe that Sweden is justified in the high prices she is asking. Raw materials abroad have advanced enormously, and some are not even obtainable. Bleaching powder is said to be almost impossible to secure, and a number of mills are not expected to be factors in this market at all. Some of the quotations received within the past few days on bleached sulphite were as high as 9c and 10c. In fact, it is practically impossible to arrange for any shipments for abroad for less than this figure. The market in New York City is nominal at 7 1-2c to 8c, but little can be secured at this price. Unbleached sulphite is quoted at 3 3/4c to 4c, but this, too, is not plentiful. Easy bleaching has been in good demand because of the high cost of bleached, but as there is but little easy bleaching to be had, this has advanced to a nominal figure of about 4 1-2c to 4 3-4c. Krafts, too, are practically out of the market. For what imported kraft is available, dealers want about 4 1-2 to 5c. The domestic mills have little to offer. The pulp market appears now as if it will grow worse during the summer. With pulp higher and harder to obtain, it means that all other paper making materials must advance, for in their efforts to use substitutes for sulphites, most raw materials will come within the scope of the mills.

Rags have strengthened a little during the past few weeks, and the mills have manifested a greater interest than they have shown for a month or so. However, conditions are far from active. According to information received among the dealers, the market must ascend within a short time. Now, the small men have practically no stock. They have been bought out by the large hands, which are now actually in control of the situation. Few, if any, offers are being made to the mills. In fact, it seems to be the policy to compel the manufacturer, when in need of rags, to come into the market of his own accord. With the largest part of the present available stock in the hands of the big dealers, the mills will find it practically impossible to escape high prices. Good new white cuttings are scarce, and are firm at about 9c to 10 1-2c. Old whites are selling fairly well at about 5c to 6c. An upward movement was reported in thirds and blues, stocks selling as high as 4 1-2c. Roofing stock is hovering about 2c. As the mills will continue to operate at full capacity throughout the summer, it is expected that there will be no dull season for the rag market,

and that an active demand will continue through to the fall, when the shortage of stock will be felt more keenly than it has ever been felt.

The news that England had placed an embargo on bagging, rope, flax waste and thread waste, has caused considerable strengthening in these markets. Bagging and rope have been rather quiet and declining gradually, but the embargo stopped the decline, and gave the market a firmer aspect. From the inquiries received from dealers for bagging within the last few days, it appears that there is a movement on foot to "corner" this article. Gunny is holding to about 3 1-2c to 3 3/4c. Bright bagging is firm at 3c to 3 1/4c, while sound bagging has been sold at 3c. Rope is firm at about 4 1/4c to 4 3/4c, but little demand is reported.

In waste papers there has not been much activity in New York City for the mills claim they have been getting better prices in the suburbs outside of the metropolis. In the instance of mixed papers, while there is a great need for this stock among the board mills, the fact that various railroad embargoes make shipment impossible, is holding the market to about 55c. Over-issue news is growing firmer, and may soon be rather scarce. Krafts are in fair demand at about 2 1-2c to 2 3/4c. Shavings are going well. Ledger, bank and magazine stocks are all fairly firm. The continued shortage of sulphite is expected to boost the shavings considerably. The other grades are preparing for advances within the immediate future.

In the paper market, there is little that is new. Newsprint, when available, does not sell for less than 4c. The mills are all operating at top capacity, shipping as fast as they can ship, but, so far, conditions have not been helped materially. Not only is the domestic demand extraordinary, but there is also a big inquiry for export "at any price." While comparatively little of this export business is being taken, the supply is still far from sufficient to meet the home needs. In book papers, a situation similar to that in newsprint exists. So great has been the demand for book, that there is hardly a mill in the country which is in a position to take orders for delivery, even within a few weeks. Prices are maintaining their high level. Tissue papers are very firm. No. 1 white is now practically unobtainable. One maker mentioned his price for this grade as \$1.00, but admitted his inability to sell any. Manila tissue is as high as 85c, at which figure very little business will be taken. The mills in this field are busy, working about one to four months behind with orders. In boards a peculiar condition exists. About New York City, the demand has fallen considerably, due most likely to the cloak makers' strike. However, it is difficult to get stock. The mills are all running full with orders far ahead. From the West a good demand is current. Prices are high and are not expected to weaken. Krafts are scarce and are selling, when available, at prices ranging from 8c to 10c. Manilas are fairly active, and so are fibres. Both maintain their firmness. Present indications are that the summer will be a busy one. Even should the home demand become quiet, the manufacturers will be able to continue their high prices by reason of the large amount of export business which is afloat and which appears to be waiting only for the right moment. Thus far, the jobbers have complained of an easing, but this has had no effect on the mill end.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$20 to \$22 at pulp mill.

Ground Wood, No. 2, \$19 at pulp mill.

Unbleached Sulphite, dom., 3.50c at pulp mill.

Easy bleaching, impt., 4.50c, ex-dock, N.Y.

Unbleached, foreign, 3.75c to 4.25c, ex-dock, N.Y.

Kraft, 4.50c to 5.00c, ex-dock, N.Y.

Bleached, domestic, 6.25c, at pulp mill.

Bleached, foreign, 8c to 13c, ex-dock, N.Y.

Paper.

News (rolls), \$4.00 up, at mill, in carload lots.

News (sheets), \$4.25 up, at mill, in carload lots.

Book papers (carload), No. 3, 5.50c.

Book papers (ton lots), No. 3, 5.50c to 6.25c.

Book papers (carload), No. 2, 6.00c to 6.50c.

Book papers (ton lots), No. 2, 6.50c up.

Book papers (carload), No. 1, 6.50c to 7.00c.

Book papers (ton lots), No. 1, 6.75c up.

Sulphite bonds, 6 1/2 to 8c.

Writings, 6c. up.

Grey Browns, \$2.85 to \$3.50.

Fibre, \$4.50 to \$5.50.

Manila No. 1, \$4.50 to \$5.50.

Manila, No. 2, \$3.75 to \$4.50.

Manila, B., \$3.35 to \$4.00.

Unglazed Kraft, \$7.50 to \$10.00.

Glazed Kraft, \$9.00 to \$12.00.

Tissues, bleached, 90c to 1.50c.

Tissues, unbleached, 80c to 1.00c.

Tissues, unbleached, 65c to 1.00c.

Natural greaseproof, 10c to 14c.

Bleached greaseproof, 15c to 20c.

Drug papers, whites and tints, 7c to 9c.

Paper bags, Manila, 50, 10 discount.

Paper bags, kraft, 40 discount.

Confectionery bags, 33 1-3 discount.

CANADA'S PAPER EXPORTS.

For the year ended March 31st, Canada exported newsprint to the value of \$17,974,292. This figure represents an increase of \$3,882,630 within the year. Five years ago the total export of Canadian newsprint was \$3,092,437, or less than the amount of the past year's increase in the trade.

The great bulk of this trade is with the United States, which took 14 million dollars out of the 16 million of our exported printing paper in the 11 months of the last fiscal year. The remainder went chiefly to the British Dominions.

The growth of the trade is shown by the following figures of the exports of chemical and mechanical pulp, and of newsprint for the last seven years.

Period.	Chem. pulp.	Mech. pulp.	Newsprint.
12 mos. . . 1909-10	\$1,658,846	\$3,545,751	\$2,612,243
Do., . . . 1910-11	1,308,101	4,407,431	3,092,437
Do., . . . 1911-12	1,587,535	3,506,770	3,201,926
Do., . . . 1912-13	2,100,842	3,408,702	5,692,126
Do., . . . 1913-14	2,923,093	3,441,741	11,386,845
Do., . . . 1914-15	4,806,622	4,459,539	14,091,662
Do., . . . 1915-16	6,801,011	3,775,537	17,974,292

The record of the Canadian pulp and paper export trade by months during the period of its most rapid expansion is as follows, showing that paper exports now average well over double the figures of 1913:

Month	Chemical pulp.	Mechanical pulp.	Newsprint.
1913.			
April	\$ 202,110	\$ 143,126	\$ 596,554
May	201,276	234,494	810,575
June	121,199	173,445	874,284
July	218,302	251,284	793,898

August	203,542	276,171	889,645
September	232,835	399,057	941,986
October	233,159	467,878	976,028
November	273,278	357,688	1,037,207
December	311,251	450,030	1,057,817
1914.			
January	257,194	265,750	928,223
February	254,250	174,522	1,049,778
March	414,687	259,296	1,432,850
April	258,497	164,494	836,110
May	386,909	189,792	1,092,172
June	347,606	270,990	1,135,283
July	358,170	604,869	1,149,569
August	382,225	169,942	1,108,285
September	489,741	566,217	1,247,780
October	484,575	935,226	1,405,431
November	321,128	455,280	1,064,634
December	428,164	457,833	1,361,155
1915.			
January	393,778	239,758	1,085,019
February	358,983	263,948	1,082,032
March	596,846	146,190	1,524,192
April	355,843	120,437	970,445
May	406,568	146,844	1,341,243
June	429,489	131,982	1,345,444
July	442,976	468,385	1,441,647
August	551,693	157,612	1,564,510
September	471,447	435,447	1,207,460
October	612,920	526,444	1,563,757
November	597,883	388,894	1,753,013
December	794,312	213,707	1,559,917
January	635,103	565,573	1,420,259
February	654,839	171,589	1,752,710
March	847,831	448,623	2,053,887

RECOMMEND THAT ONTARIO REORGANIZE FOREST PROTECTION SYSTEM.

Twenty-two of the leading Boards of Trade of Ontario have made representations to the Ontario Government for a reorganization of its forest protection system.

The Boards have specified two reforms: the reorganization of the rangers so as to provide for supervision and inspection, both in the head office and the field; secondly, that the Government should make some effort to keep down the timber damage resulting from settlers' clearing fires.

For the latter purpose, it has been suggested that a system of "permits" issued by fire rangers to settlers intending to burn slash in the neighborhood of forests, should be tried out in a few localities, so as to determine the best procedure. The Permit system has been successfully operated in Quebec and British Columbia for several years. It has not antagonized the settler, while saving enormous areas of timber.

The widespread demand for a general reconstruction of Ontario's forest protection plan is finding sympathetic consideration by the Minister of Lands and Forests, who during the past year has been exceedingly busy with other special duties. The present forest guarding system of the province has been retained for a great many years practically without alteration. It is complained that the rangers, while numerically sufficient, are left to their own devices and, as with a body of artisans in a factory, cannot and do not perform their fair duty in the absence of strict discipline and a guarantee of permanent employment. Forest ranging, according to modern practice, requires skill-

ed men and skilled overseers, or the expenditure of public money is considerably wasted. The proposals of such bodies as the Commission of Conservation, the Canadian Forestry Association and their supporters, is that the forest guarding system of Ontario be placed under a special qualified officer of the department, who will have authority to rebuild the present service.

The second proposition, as outlined by the Boards of Trade, is that the ruin to valuable timber tracts caused by settlers' fires should be put under some form of control. British Columbia and Quebec now prohibit a settler in a forested district from setting out a clearing fire until he has consulted a forest ranger. The ranger is nearly always close at hand and advises the farmer to pile his slash in the middle of his clearing, not against standing timber, and not to select a dry or windy day for applying the torch. With these simple instructions followed, he issues a permit good for a number of days. The service to the settler is decidedly of value for perilous fires are obviated and the timber assets of the district kept alive. Ontario now has no means of preventing wholesale destruction of precious pine and spruce and hardwoods from settlers' fires and the losses to the province annually are great.

Timber destruction in all parts of Canada is going on at a rate which, if unchecked, must lead over 5,000 wood-using industries into serious difficulties. Ontario alone has 2,000 wood-using industries and 82 per cent of their wood requirements are obtained within the province. These industries, distributed in nearly every town and city, are no more secure than their foundation of forest materials. It is just as imperative that the living trees, which are intended to uphold Ontario's industries and pay sheets should be insured by governments against the plague of fire as that buildings and plant should be insured.

When it is considered that the limit holders mutual associations in Quebec Province have built up efficient systems of forest protection at a cost of about one-third of a cent per acre for fire protection, an efficient system in Ontario would involve little, if any, additional cost. A third of a cent an acre for protection makes a very minute showing beside a magnificent pine forest reduced to charcoal for lack of decent care. It has been estimated that forest fires in Canada, mostly preventible, destroy more wealth than would pay the annual interest on the last Dominion loan of 100 million dollars.

CHARLES FOURDRINIER DEAD.

Charles W. Fourdrinier, a member of the family of Fourdriniers associated with the paper machines bearing their name died recently in New York State. Mr. Fourdrinier, who was himself born in England, had for the past ten years been resident in Watertown, N.Y., where he held a position with New York Air Brake Company, doing special work in the inspection department. He was about seventy years of age.

PAPER COMPANY INCORPORATED.

The St. Maurice Paper Company, Ltd., of Montreal, has been incorporated, with a capital of \$10,000,000. The applicants for the incorporation included A. Chase-Casgrain, K.C., E. M. McDougall, and P. C. Casgrain, of Montreal, advocates.



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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calendar Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Diffusers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digester Lining:

Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Drainer Bottoms:

Snell, Samuel, Co., Holyoke, Mass.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Ont.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

Crookes, Roberts & Co., Sheffield, Eng.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
 Carthage Machine Co., Carthage, N.Y.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Norwood Engineering Co., Cowansville, P.Q.
 Progress Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Fox, Stockell & Co., London, England.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Storage Tanks:

MILL SUPPLIES---Continued

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphate Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jones & Glassco, Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glass, Co., Montreal, P. Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurttemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Tippet, Arthur P. & Co., Montreal, Canada.

Taylor, J. A., Montreal, Canada.

Westby, P. P., Peterboro, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R. Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City.

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.

Lincoln Paper Mills Co., Ltd., Merriton, Ont.

Ford, J. & Co., Port Neuf.

Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.

Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.

Rolland Paper Co., St. Jerome, Que., Mount Rolland Que. and

Montreal, Que.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

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Eddy Co., The E. B., Ltd., Hull, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

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 Toronto Paper Mfg. Co., Cornwall, Ont.
 Canada Paper Co., Montreal and Toronto.

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 Montreal Paper Co., St. Basile, Que.
 Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
 Riordon Pulp and Paper Co., Ltd., Montreal, Que.
 Western Paper Mills, Ltd., Vancouver, B.C.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Ford, R. & Son, Port Neuf, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Strathcona Paper Co., Strathcona, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 McLeod Pulp Co., Ltd., Liverpool, N.S.
 Walker, J. R. & Co., Montreal, Que.

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 Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

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 Ford, R. & Son, Port Neuf Station, Que.
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 Western Paper Mills Ltd., Vancouver, B.C.

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 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 Riordon Pulp and Paper Co., Merritton, Ont.
 Strathcona Paper Co., Strathcona, Ont.
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 Brompton Pulp & Paper Co., Ltd., East Angus, Que.
 Canada Paper Co., Montreal, Que.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Northumberland Paper & Electric Co., Campbellford, Ont.
 McLeod Pulp Co., Liverpool, N.S.
 Western Paper Mills, Ltd., Vancouver, B.C.

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Minister of Lands, Forests and Mines

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	62

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	10

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	6
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	13
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	16
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	
Churchill & Sim.....	62
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D

Darling Bros, Ltd.....	
DeCew, J. A.....	64
Dean & Son.....	
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
Ferguson, H. S.....	64
J. Ford & Company.....	62

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	65
Glens Falls Machine Works.....	

H

Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	62
Hersey, Milton Co.....	64
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K

Klipstein, A. & Co., Ltd.....	7
-------------------------------	---

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Mackinnon, Holmes & Co.....	6
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	68
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15

N

Northern Crane Works, Ltd.....	62
Norwood Engineering Co. of Can. Ltd.....	60

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66

S

Sadler and Haworth.....	50
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Snell, Samuel Co.....	
Spencer, J. H. & Scns.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	
Ticonderoga Machine Works.....	
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12

W

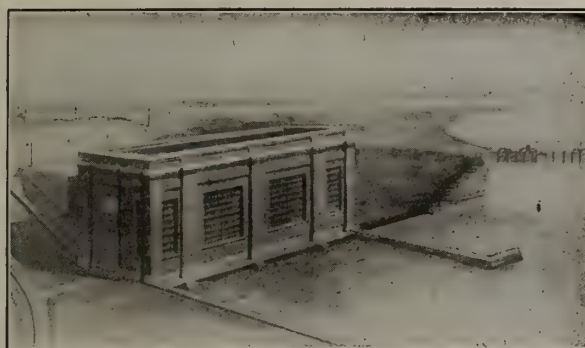
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	62
Winn & Holland.....	
Witting Bros.....	66



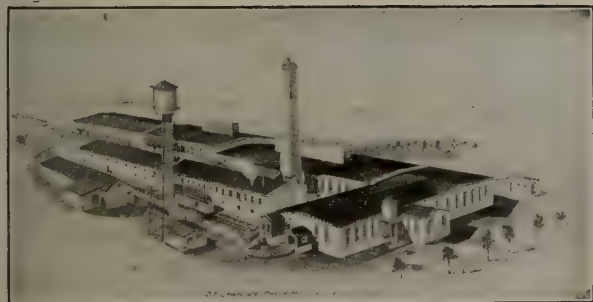
Barber Paper Mill, Georgetown, Ont.



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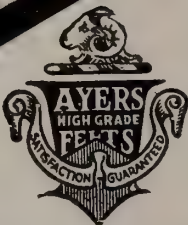
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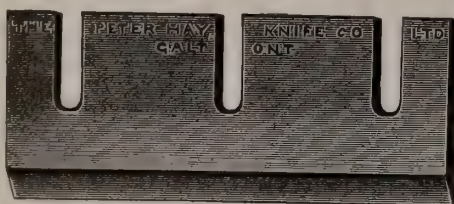
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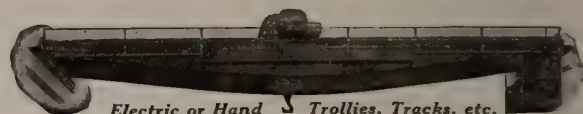
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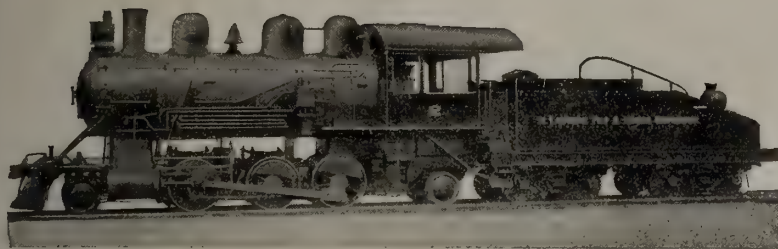
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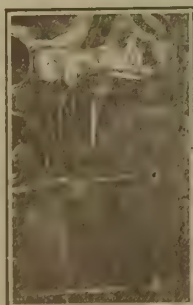
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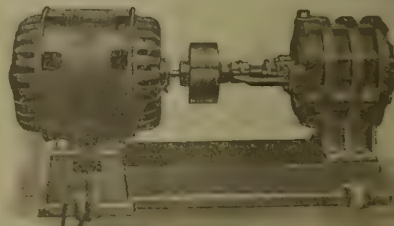


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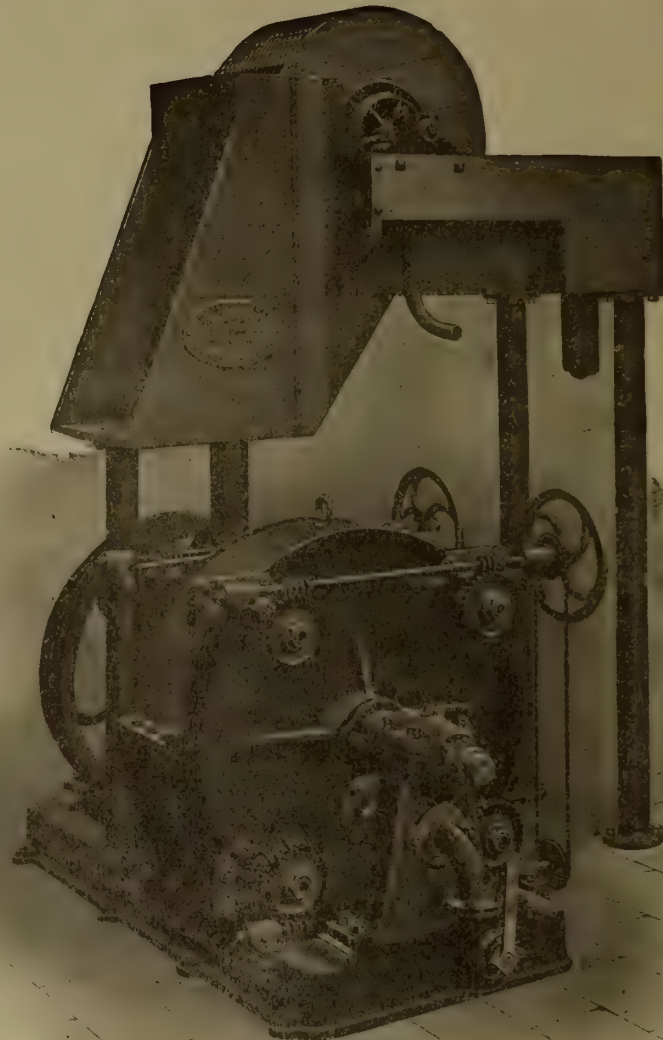
See particulars inside.

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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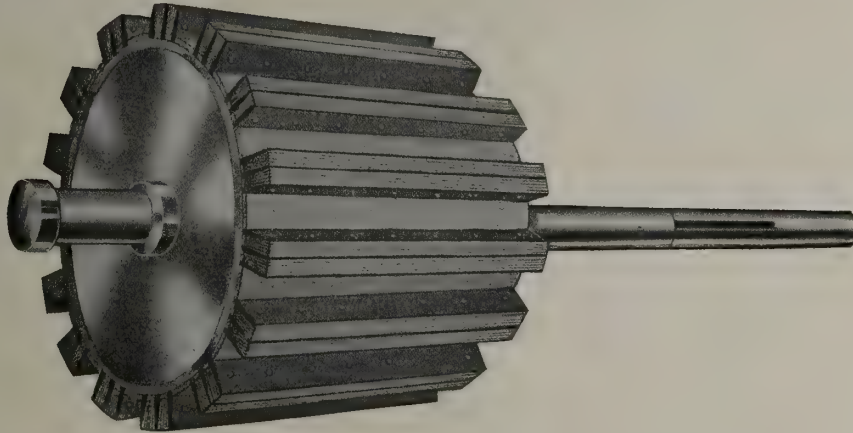
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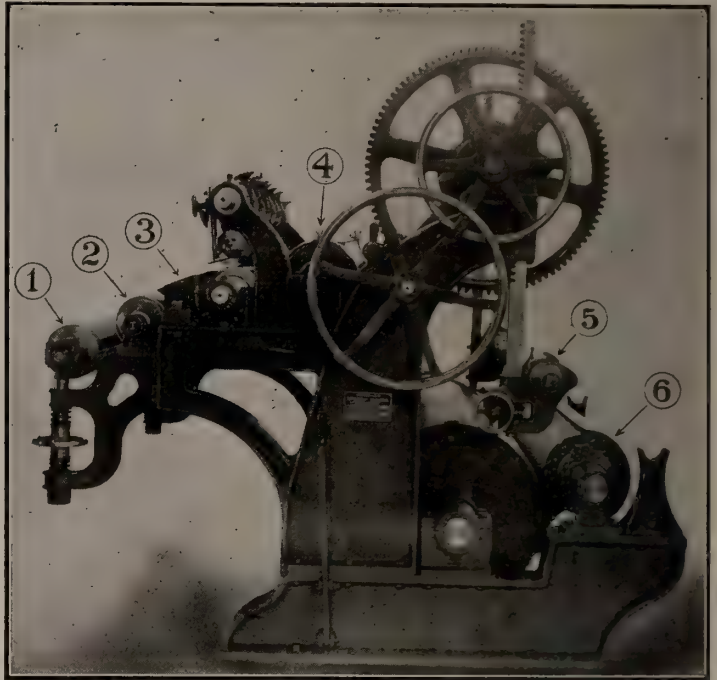
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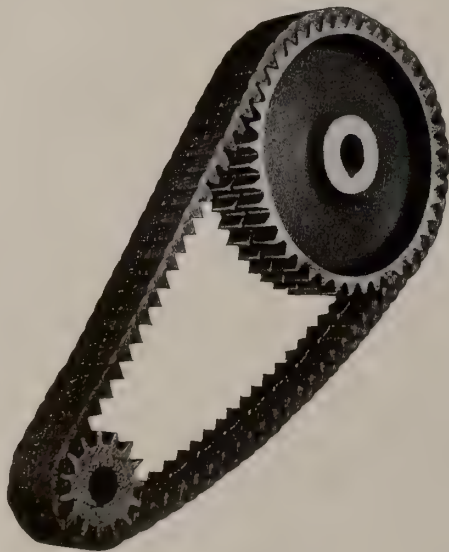
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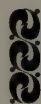
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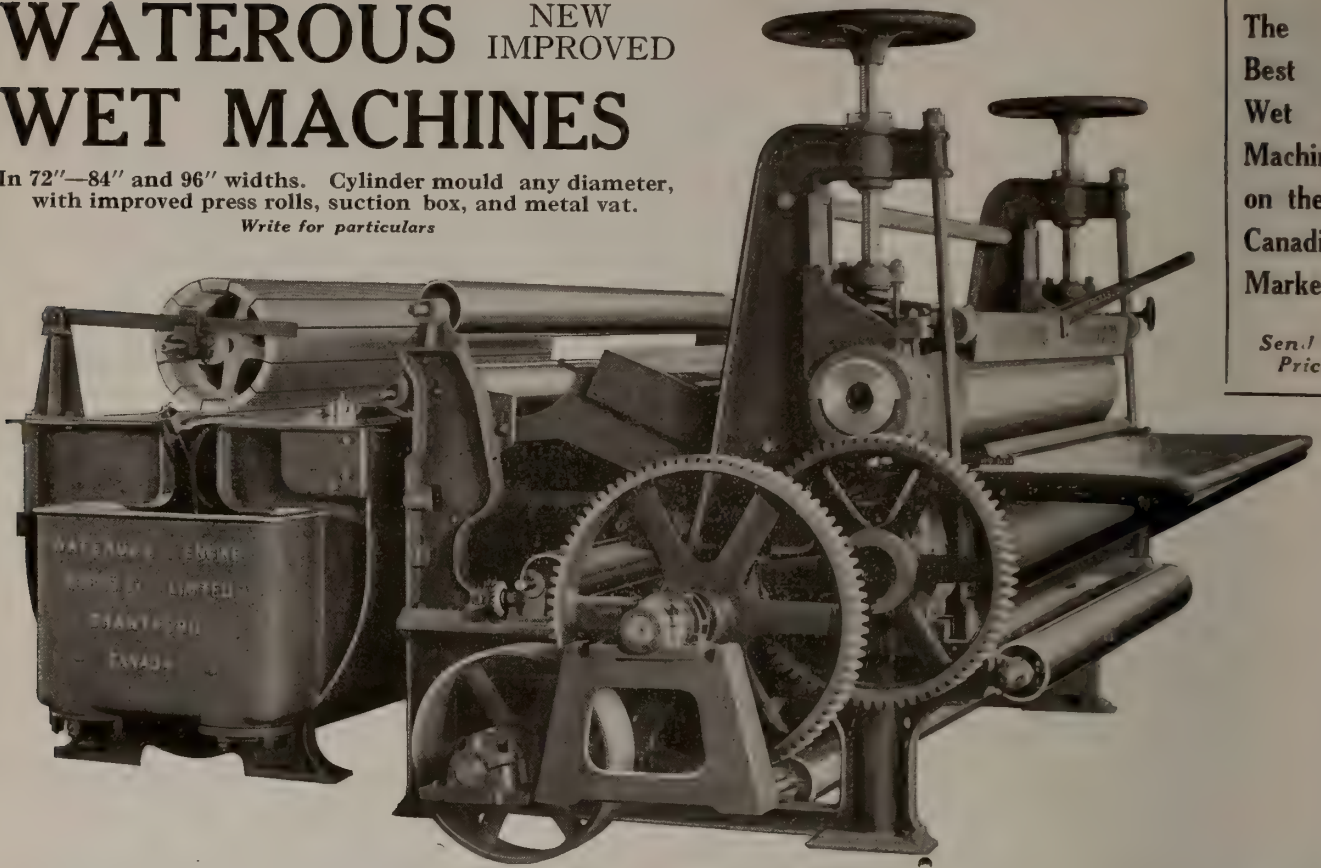
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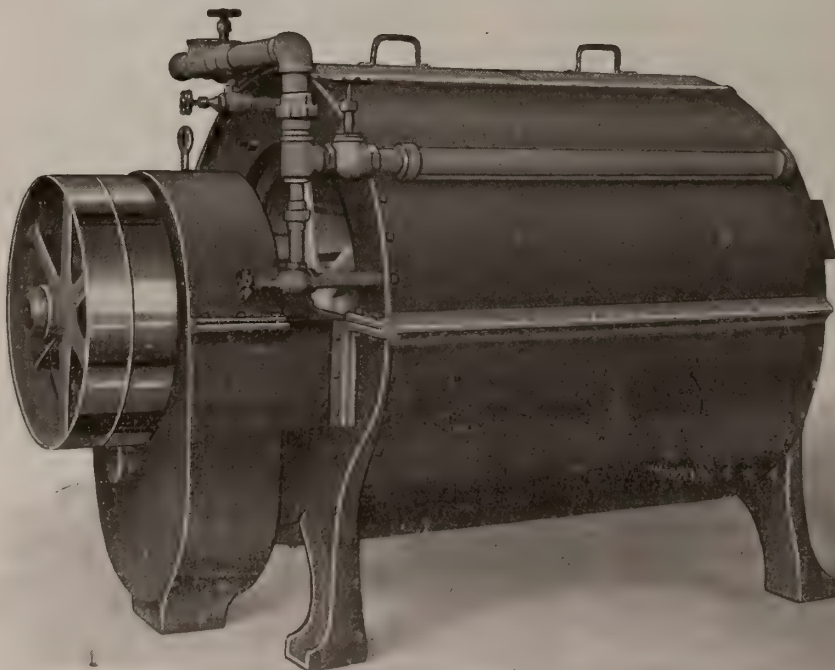
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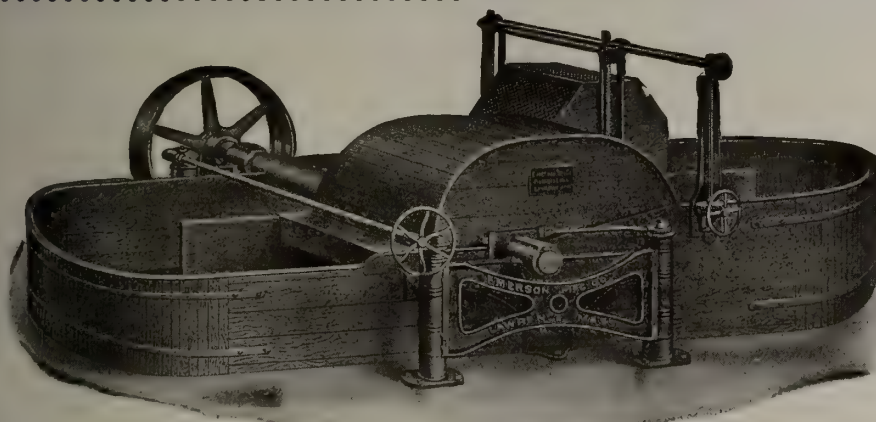
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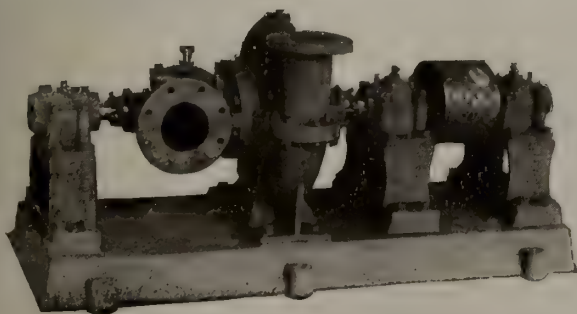
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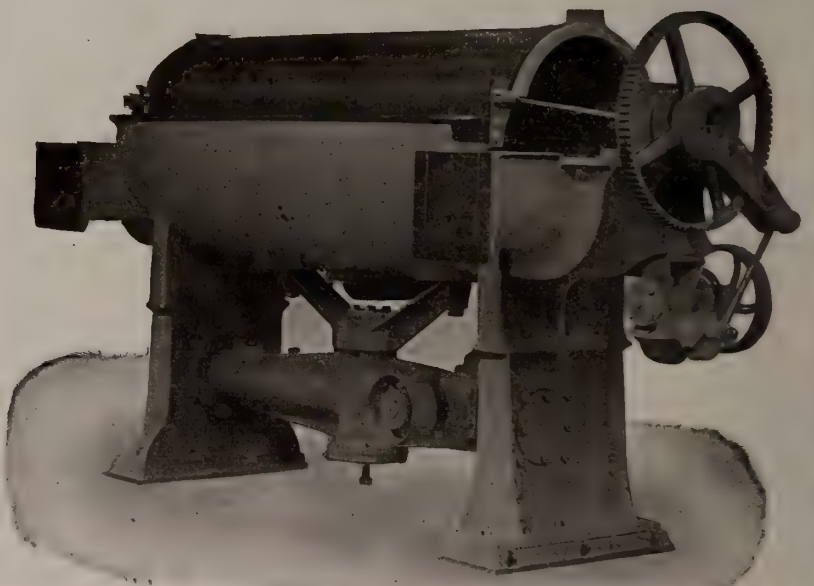
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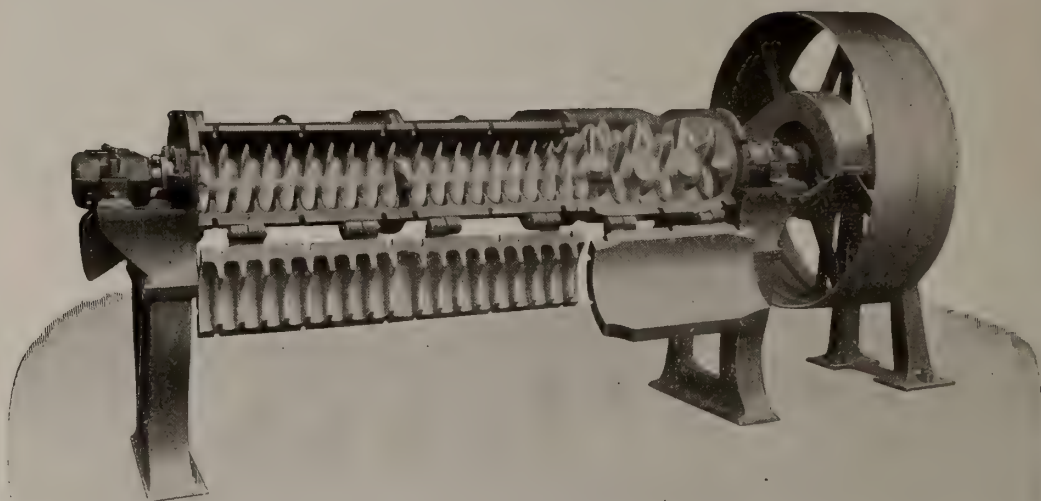
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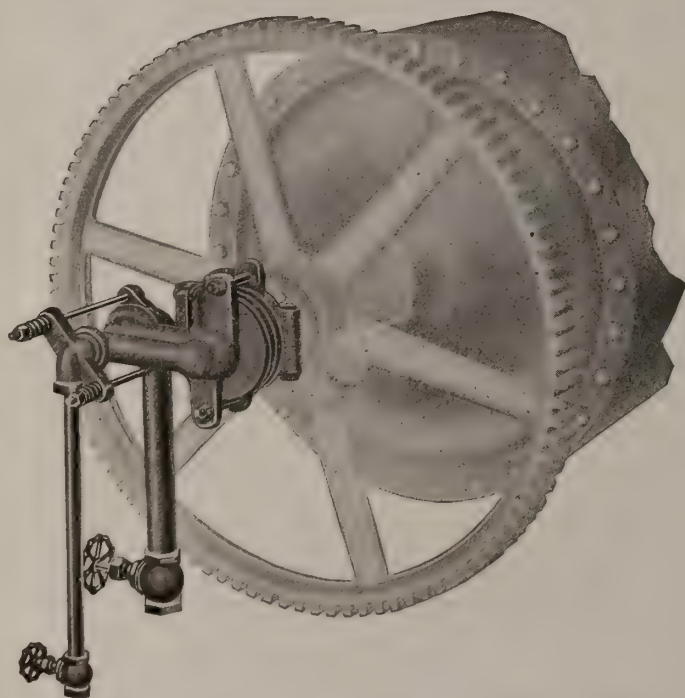
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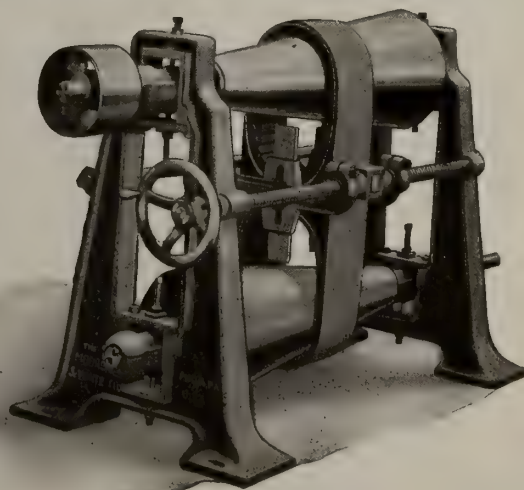
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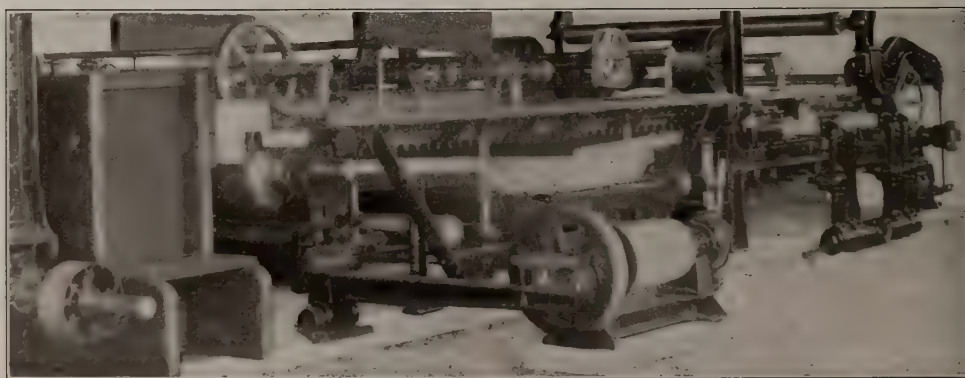
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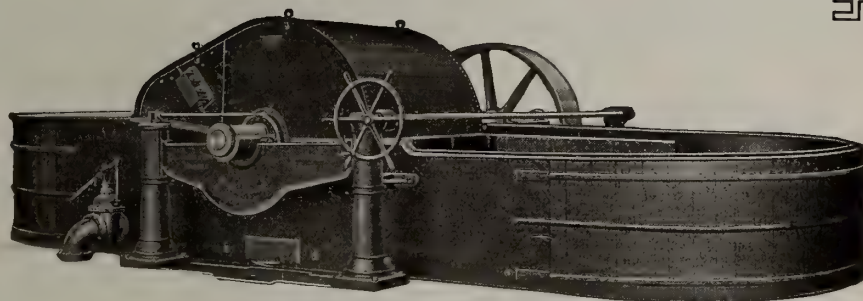
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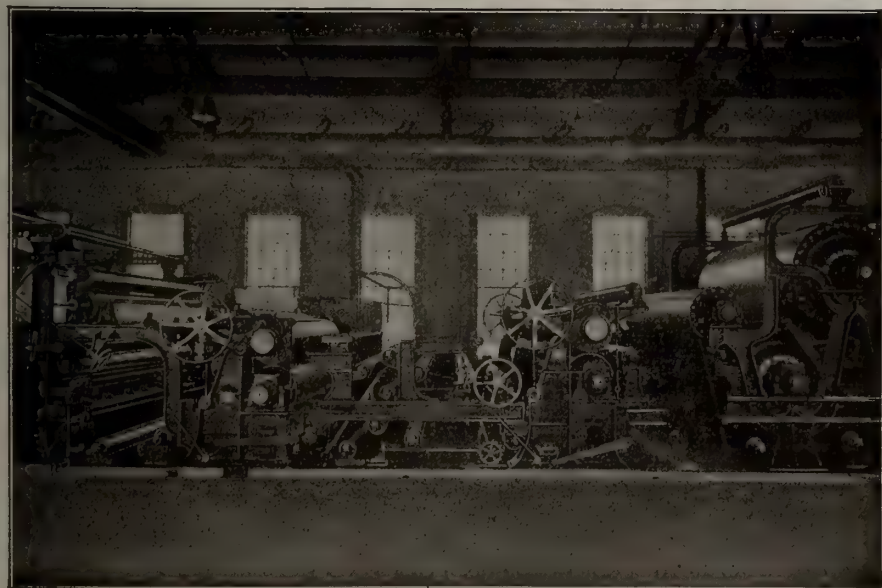
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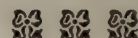
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Pulp and Paper Magazine

A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
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MONTREAL, JUNE 15, 1916

No. 12

The Niagara Meeting

If the pulp and paper mills in the Niagara district and the Executive of the Technical Section of the Canadian Pulp and Paper Association are to have their way the mid-summer meeting of the Section to be held at Niagara Falls should prove to be a banner event in the history of the industry. The mills are sparing neither trouble nor expense in their effort to make the occasion an interesting and memorable one for every member of the section, and they are to be congratulated upon the excellent provision they have made, as outlined in the call to members from the Chairman of the Section, which appears in another column.

The present is a very opportune time for the technical members of the industry to meet in session. If never before, Canadian industry now recognizes the part played by the professions of chemistry and engineering in modern industrial progress. Our laxity in recognizing these great factors in progress has been brought forcibly to our attention during the past year and a half, and in every industry, technically trained men are in demand. Problems have arisen during the past eighteen months that have baffled the best minds in the pulp and paper industry of the Dominion, and the solution of these problems is up to the chemists and engineers in their research work.

This meeting should prove a valuable one to every member of the section, and every member should make a very special effort to attend.

The Price of Paper

At the recent meeting of the Canadian Press Association in Toronto, the paper situation was discussed, along with many other questions confronting the publishers of the Dominion at the present time. Among other things, economy in the use of print paper and the elimination of waste was urged. These are very satisfactory, but when we hear publishers stating that there has been no reasonable justification for the increase in paper prices during the past eighteen months, we cannot believe that they have given the matter their serious attention. In most part, the mills have protected the Canadian publishers, and it is only those who were too near-sighted at the beginning of the war to prepare for eventualities that are now suffering from the shortage in paper. The factors operating towards the advances in paper prices have been outlined in these columns on various occasions. When the question of labor cost and the cost of materials entering into the manufacture of paper are considered, the justification of advanced prices is plainly apparent. But on the other hand, newsprint is a commodity influenced by the laws of supply and demand, the same as other commodities. Canada has a great market in the United States for her paper; there is a shortage of paper in that country, prices are high and Canadian mills are reaping the benefit. As we stated above, however, in the majority of instances, the mills are protecting their Canadian customers.

Safety-Work

Mr. A. G. Pounsford's article in this issue on "Accident Prevention Work," should receive consideration from every member of the pulp and paper industry in Canada. Mr. Pounsford is Safety Engineer with the Ontario Pulp and Paper Makers' Safety Association, formed as a protective association in connection with the Workmen's Compensation Act, passed by the Government of that province a year or so ago. He has had a long experience in safety work in connection with pulp and paper mills, and has come to Canada well prepared to look after the interests of the mills with which he has to deal.

Accident prevention has become a factor in designing and engineering. It will be allowed that the best time to instal safety appliances is when the plant is being erected, and this plan is now being followed by several concerns in the Province of Ontario, but there is no reason why any mill should hesitate to give accident prevention work its attention. The safeguarding of employees from accident is a work of efficiency and economy. It has been proved that the initial cost is small in comparison with the saving of life, labor and subsequent cost of accidents.

We hope to have a series of articles from Mr. Pounsford, written with close application to his work among the Ontario mills, and feel that his suggestions will bear fruit not only in the province in which he is principally interested, but throughout the Dominion wherever pulp and paper mills are to be found.

Saving the Settler from Cropless Lands

The opening up of non-agricultural lands to settlement has produced some of the most far-reaching and pitiful tragedies in the Dominion's history. Every province has communities which have been permitted to make the fatal error of a bad location. Their subsequent history is an unbroken line of bad crops, poverty, suffering and human demoralization. Too poor to move away, the farmer and his family resign themselves to a pitiful standard of living, giving their time and efforts for practically no return.

Every province and the federal authorities have made such blunders in times past, nor is there satisfactory evidence that a general and complete reform has been brought about. Farmers still are allowed on Federal and Provincial "homesteads" which are impossible for field crops. The policy was, of course, more the result of laxity in classification and not a deliberate effort to send settlers to useless lands. The laxness, however, is growing in public disfavor and the tendency now is to protect the settler and to conserve rocky, sandy areas for their natural purpose of growing trees.

Several survey parties are engaged on soil examinations this summer, and such work is bound to achieve higher importance in the eyes of governments. One party, composed of Messrs. F. C. Nunnick, of the Commission of Conservation, and Walter Graham, of the Experimental Farm, Ottawa, is in New Brunswick, co-operating with the Provincial Government in a scheme of land classification. The project deserves the hearty support of conservationists everywhere for the benefits are far from local.

C. P. & P. A. Executive Meets in Toronto

A meeting of the Executive of the Canadian Pulp and Paper Association was held at the Royal Canadian Yacht Club, Toronto, on June 12, where the members were the guests of Mr. I. H. Weldon, former President of the Association. Owing to the absence of Capt. J. H. A. Acér, President, Howard Smith, Vice-President, was in the chair. There was a good attendance including a number of members of the trade in Toronto and Ontario, who were invited to be present.

R. J. Younge, of the Export Association of Canada, gave an interesting address on the new conditions now facing the world's trade. There will come to Canada after the war an unprecedented opportunity for securing orders from other countries, and Mr. Younge emphasized the necessity for preparedness on the part of the pulp and paper trade. He remarked that although at this moment, particularly when the demands upon the trade were greater than the capacity of the mills, it might seem inopportune to discuss the question, present conditions were an almost certain indication that the trade could expand. He urged the members to give the matter serious consideration and co-operate with the Export Association.

The question of paper mill wires was taken up. Mr. Rolland, of the Rolland Paper Co., and Mr. Campion, of the Belgo-Canadian Pulp and Paper Co., spoke of a recent visit to several centres across the line. They thought that, although the cost and general wire situation was a serious one, yet by the exercise of care, patience and economy, with an occasional shut down, mills would be able to pull through very well.

A. D. Huff, who is looking after transportation matters for the Association, took up the question regarding the proper classification of paper imported into Canada. At present all paper comes in under three headings, and it is desired that there should be more specific data, covering about fifteen different kinds of paper. A petition will be sent to the Federal Government to make certain changes which have been suggested.

The Transportation Committee held a conference with Mr. J. E. Walsh, traffic manager of the Canadian Manufacturers' Association, in regard to transcontinental rates on paper and paper commodities. A more definite classification is desired and certain other matters which were gone into thoroughly. When the details are in shape it is likely they will be brought before the Dominion Railway Board for approval.

THE NIAGARA GATHERING

Meeting of the Technical Section of the Canadian Pulp and Paper Association to be Held at Niagara Falls, June 29-30th.

The arrangements for the next meeting of the Technical Section are about completed and indications are that it will prove one of the most enjoyable and interesting events in the history of the industry. The mills of the Niagara District are preparing a right royal welcome for all the guests, sparing neither trouble nor expense in their endeavor to make the occasion a memorable one. Not only has ample provision been made for discussion of the many papers and technical matters to be brought before the meetings, but the trip will include visits to all the mills in the district where opportunity will be given for inspection.

The following is the itinerary of the trip as sent out by the Chairman of the Section. This is the call to the members and a hearty response is looked for.

"The June meeting will take the form of visits to pulp and paper mills in the Niagara district. The Ontario Paper Company, Ltd., the Kinleith Paper Company, the Beaver Board and Fibre Company, the Rior-don Pulp and Paper Company, Ltd., and the Provincial Paper Mills Company, Ltd., have generously invited the members of the Technical Section to be their guests and will provide transportation by boat from Toronto to Port Dalhousie and return, trolley cars and automobiles to the different mills, lunch and dinner on Thursday, June 29, rooms at the Clifton Hotel, Niagara Falls on Thursday night, breakfast and lunch on Friday and transportation to the mills during the day. It is hoped that a large number of the members will take advantage of this opportunity and that several of our friends from the American Association of the Pulp and Paper Industry will join us.

"Those members coming by way of Toronto should meet at the City Wharf, foot of Yonge Street, near Union Station on Thursday morning, June 29, to take the Niagara, St. Catharines and Toronto steamer leaving at 8 o'clock for Port Dalhousie. A representative of the mills will be on board to provide the members with boat tickets. The party will go by trolley car to Thorold. Lunch will be held at the hotel at 12 o'clock, and those members coming by other routes should arrange to join the party for lunch in Thorold. At 1.30 P.M. automobiles will take us to the ground-wood and news mills of the Ontario Paper Company, Ltd., in Thorold, and at 3.30 P.M. the party will proceed to the plant of the Beaver Board and Fibre Company. After these mills have been visited a special trolley car will run to Niagara Falls, Ont., arriving at the Clifton Hotel about 6 P.M. Dinner will be served at 7 P.M., and a meeting of the Technical Section will follow.

"On Friday morning, June 30, the members will meet after breakfast and leave from the hotel at 10 A.M. to see the Voith grinders and other attractions at the Cliff Paper Company's mill across the river in Niagara Falls, N.Y. Later in the morning one of the Canadian power plants will be visited and at 12.30 the party is invited to lunch at the Clifton hotel. At 1.30 P.M. a special trolley car will return to Thorold. The members will see the Montrose book and writing mills of the Provincial Paper Mills Company, Ltd. at

2 o'clock, the Interlake Tissue Mills, Ltd., at 3 o'clock, and possibly another mill later in the afternoon.

"No special plans have been made for Friday evening. If any of the party wish to go back to Niagara Falls a trolley car will be at their service. Those returning to Toronto may take the 7 P.M. steamer from Port Dalhousie, arriving at Toronto at 9.30 P.M. Some of the members coming from the East may want to take the opportunity of returning by steamer from Toronto to Montreal through the Thousand Islands.

"This will be an excellent chance to see a variety of up-to-date pulp and paper mills and to enjoy the hospitality of the Thorold companies. The Dominion Day holiday directly follows the meetings so that the week-end will be free for sight-seeing or other plans which the members may wish to carry out.

"The arrangements for the meetings are in the hands of Mr. Dan Daverin, Provincial Paper Mills Company, Ltd., Thorold, Ont. All those planning to attend should get in touch with Mr. Daverin as soon as possible letting him know by what route you are coming, whether you wish hotel accommodation reserved, etc. If you wish Mr. Daverin to reserve steamer accommodation, Toronto to Montreal, please give the date for returning and the style of berth you desire.

"The steamer ticket is \$10 Toronto to Montreal, lower berth \$2, upper berth \$1, making the state-room \$3; meals extra. The steamers leave Toronto every day at 3.30 P.M., arriving in Montreal the following day at 6.15 P.M."

HOT MECHANICAL PULP.

All attempts to make hot ground pulp with the aid of old or weakly constructed apparatus are futile, says an exchange. In one mill experiments were made in this direction, but failed. They were even dangerous to life, owing to the bursting of the stones, which, for want of axles thick enough, could not stand the increased pressure. Some new machinery has been constructed, specially built for making hot pulp, the manufacture proceeds steadily and without trouble. The advantage of the hot grinding process, compared with others, may be recognized in the fact that with four or five mills we were hardly able to take care of the resultant coarse stuff, whereas now a single mill handles it easily.

Tissue Papers from Hot Ground Pulp.

For tissue papers of less than 18 grammes per square metre weight, that must contain 25 to 30 per cent of mechanical wood pulp, it is advisable to allow the pulp wood logs that are to be converted into hot mechanical pulp to soak for some time before grinding in hot water. The mechanical pulp thus obtained is exceedingly feltable and like wadding, so that on open as well as automatic removing machines, steady working and a very strong product will result. For the production of cheap kinds of imitation parchment such a previously warmed stuff is to be highly recommended. The pulp combines more intimately, is not so plainly visible, and the sheet of paper possesses remarkable toughness.

THE NECESSITY OF STARTING A SAFETY FIRST CAMPAIGN

By A. G. POUNSFORD,

Safety Engineer, Ontario Pulp and Paper Makers' Safety Association.

The majority of pulp and paper mills as yet have not taken up accident prevention work, and we hope through a series of articles in this magazine to show the manufacturers the absolute necessity in this day and time of looking more to the welfare of their employees than has been customary previously.

The hazards in pulp and paper mills are comparatively small as compared with some of our industries.

We do not need to go out of Canada, however, to find remarkable reductions in accidents through organized safety work. Take the case of the Hawkesbury Mill of The Riordon Pulp and Paper Co. as an example. During the year 1914 this company had 255 accidents causing loss of time. The management was convinced that this figure could be substantially reduced, and at once employed a safety expert to investigate the cause of this high accident rate, and determine means of preventing similar accidents. A Safety Committee was also formed, and seven men were appointed to have special duties pertaining to the prevention of accidents.

As a result of these measures during the year 1915 there were 66 accidents resulting in lost time or a reduction of 76 per cent. We point to this record with pride, and feel that similar results can be shown in many other mills throughout Canada.

The great majority of accidents which happen can be attributed more to carelessness than to defective and unguarded machinery. In fact, experience of practically every corporation has been that one-third of the preventable accidents could be eliminated by the installation of mechanical safeguards, and two-thirds by educative means.

As an example of careless accidents, we wish to cite two accidents which were reported to the Compensation Board of Ontario by one of the Pulp and Paper Mills in that Province. The report reads as follows:

"The man was standing on a section of mill floor about eight feet square which he was sawing off. Evidently he forgot where he was standing, and sawed away at the floor until it dropped off. He fell with it into the flume, a distance of sixteen feet, striking on the rocks." There was one other man on the floor with him when it fell, and both were badly injured. Four days later in the same mill an identical accident to the foregoing happened, and three men fell a distance of ten feet. Thus, five men were injured within one week merely from gross carelessness. Certainly by posting notices, and calling the attention of the men to the first accident, the second could have been prevented. These two accidents would hardly happen very often, but the fact that they did happen demonstrates that employees should be educated along the lines of personal caution.

The report, for the past year, of the Ontario Compensation Board on accidents happening in the pulp and paper mills states that there were two hundred

and ninety-four injuries necessitating compensation being paid. Eleven of these were permanent disability cases, and seven deaths. The greatest number of injuries were from barkers and planers, totalling forty-two, the next being due to falling objects, totalling forty-one. The majority of these accidents can be attributed to carelessness of the workmen.

One of the deaths recorded was due to a projecting set screw. This type of accident is very easily eliminated by the installation of hollow set screws or counter-sinking the collar as the case may warrant.

During the coming year the greatest possible amount of care must be exercised in instructing new employees regarding the hazards that they are working under. The mills are employing new hands almost daily, and also men whom under ordinary circumstances would not be considered for the position. This, together with the stress of meeting the increased demand for paper, is liable to result in non-instruction of new men, and along with this a marked increase in accidents.

Many concerns who have been having comparatively few accidents cannot see any reason for preventing accidents. It is necessary for them to realize that we have to look to the future rather than to the past. A gear which has been running uncovered for years may kill a man. There are a lot of stock sayings which anyone inspecting a plant has continually put up to him, such as:

"No one ever goes there."

"No one has been hurt there."

"We have only had a few minor accidents."

"I look out for safety devices personally."

These are all made by men who have not realized the advantages of safety work. It sometimes takes a serious accident to open the minds of such employers to the modern ideas of looking after their employees.

The Industrial Commission of Wisconsin is one of its reports cites the following case:

"In making an inspection of one plant a deputy of the Commission found an unguarded set screw on a shaft fourteen feet from the floor. The owner's attention was called to it, and he was urged to guard it. He protested, and wrote the following letter:

"Your deputy has requested me to guard a set screw on a line shaft fourteen feet from the floor, where no one ever has been since the shafting was placed there thirty years ago, and no one ever will go should it remain there a thousand years. If you cannot send any better inspectors around over the State than this one, the quicker your Commission is abolished the better."

"Before the Commission could collect information on set screw accidents necessary to make an intelligent reply, an employee in the above-mentioned factory had occasion to go up to this line shaft, was caught on this set screw, and was torn to pieces."

The above case actually occurred, and was not made

up to illustrate the point which it so ably brings out.

No human being desires to see men lose their life or to be horribly mangled by machinery, but there are thousands of men who will not take the necessary precaution to safeguard their men against accidents.

Another phase of the accident prevention work which needs the attention of all manufacturers, is the care of minor injuries. Last year in Ontario alone there were seven hundred and seventy-three cases of blood poisoning resulting in four deaths, eleven amputations and nine immobilized joints. By proper care at the time of injury the great majority of these cases could have been eliminated. This astounding figure shows immediately that our present plan of caring for injured workmen is wrong.

To prevent infections the Federated Safety Associations are issuing a pamphlet giving what may be termed "Minimum Requirements for First Aid Equipment." We are reprinting these herewith, as other manufacturers may be interested in them.

Instruments.

- 1 pair scissors.
- 1 pair tweezers.
- 1 eye dropper.
- 1 dozen safety pins.
- 1 tourniquet.
- 1 graduated medicine glass.

Drugs.

- 2oz. 4 per cent Boric Acid for cleansing eyes.
- 2oz. Aromatic Spirits of Ammonia (for fainting, sick headache, colic, hysteria). Dose: 10 to 30 drops in sweetened water.
- 3-2oz. Collapsible tubes of Bicarbonate of Soda mixed with Vaseline (3 per cent) for burns.
- 2oz. Castor Oil (for eye injuries).
- 2oz. Alcoholic Iodine, half strength (for external use).

4oz. Olive Oil (for dressings for burns when doctor is not immediately accessible).

4oz. Antiseptic Solution (Peroxide) for cleaning wounds.

Dressings.

- 1doz. assorted sizes sterile gauze bandages.
- 6 1oz. packages absorbent cotton.
- 1 spool Z. O. adhesive plaster, 1 inch by 5 yards.
- 3 1 yard packages sterile gauze.

Manual.

A good First Aid Manual (50c),

Equipment should be kept in dust-proof cabinet, centrally located, and marked with Red Cross. Attention should be directed by placards to the First Aid Kit.

One or more members of the organization should be instructed in the use of this equipment.

It is suggested that First Aid talks and how to use the First Aid Equipment, given at least twice a year, would prove very helpful and beneficial to workmen not knowing what to do in an emergency, and would stimulate the desired interest among workmen, and classes and competition might be inaugurated in the department.

This is the only one of the items showing the work of the Safety Associations in Ontario.

The pulp and paper manufacturers have organized "The Ontario Pulp and Paper Makers' Safety Association," whose object is primarily to reduce accidents, making a special study of the Canadian Mills with a view of adopting methods suitable to them.

This is a manufacturers' Association primarily, and will be always glad to assist any of the Canadian Manufacturers in solving accident problems without charge. The office is located at 206 Telephone Building, Toronto.

THE DISTRIBUTION OF WATER ON THE PAPER MACHINE

By JAMES BEVERIDGE.

(Specially Contributed).

Some years ago I had occasion to make a series of tests to ascertain the distribution of water on a Four-drinier paper machine, the results of which may be of interest to others in the trade. The amount of water used with the prepared pulp from the beating engines as the mixture runs on to the wire, varies according to the character of the stock and of the paper to be made; but I have found this variation to fall within certain limits for the same class of paper manufactured, provided the machineman is skilled in his work and uses good judgment regulating it. The following results were obtained while manufacturing an ordinary machine finished printing paper, the fibrous stock for which consisted of sulphite pulp, ground wood, and a proportion of esparto pulp — about 15 per cent. The mineral matter in the finished paper consisted of china clay. The wire on the machine measured 66 inches wide by 30 feet long and was capable of yielding a web of paper measuring 58 inches wide at the reel. The weight of

paper made during the tests was 21 lb. double crown (20in. x 30in.) 480 sheets to the ream, equivalent to about 30 lbs. double demy.

The amount of dry paper stock in the beating engines varies from $3\frac{1}{4}$ to $4\frac{1}{4}$ pounds per cubic foot, in accordance with the kind of paper to be made and the amount of mineral loading used. It reaches its maximum in the production of papers such as "imitation art" which are heavily loaded with clay. When the beater is emptied, the paper stock is diluted with at least its own volume of fresh water obtained from the mill supply or with "white" or "back" water from the machine itself. The mixing takes place in the stuff chest and arrangements are usually made so that this mixing is carried out with some degree of regularity to avoid variations in the weight of paper running over the machine.

In this particular case the solid contents (ie., fibre and mineral matter), in the stuff chest gave on an

average of several determinations 1,808 pounds per cubic foot, and when these solid contents were dried at 105 deg. Centigrade they gave 12.8 per cent of mineral matter. The amount of water and total solids pumped into the regulation box was therefore nearly 1.106 cubic feet, equal to 6,885 imperial gallons, per ton of paper stock.

The paper stock, as it leaves the regulation box is mixed with the "back" or "white" water from the machine prior to its passage over the sand traps and through the screens, any deficiency in the volume required being made up from the mill supply. In well arranged plants, the "back" or "white" water from all canvas, is now assembled and treated in separating vessels, whereby the valuable solid contents are almost entirely separated from the bulk of the water and returned to the machine wire; the waste "white" water from these vessels going to the sewer. This waste "white" water contains but small quantities of insoluble matter, chiefly clay or other mineral loading, which represents a very small proportion of the solids contained in the paper stock in the chest. The wash water from the spray pipes, etc., in the machine is thus efficiently and economically separated without material loss of fibre.

It was found that, the mixture flowing on to the wire contained 0.575 of a pound of total solids per cubic foot containing 21.5 per cent of mineral matter, whilst that passing through the wire cloth into the "save all" below contained 0.227 of a pound of total solids per cubic foot, with 50.2 per cent mineral matter. The amount of dilution that took place in the mixing box was therefore nearly $3\frac{1}{2}$ times the volume of the paper stock from the stuff chest or to nearly 22,000 imperial gallons reckoned on one ton (2,000 lbs.) of dry paper stock. It was difficult to ascertain the volume of this "save all" water accurately, but the writer is of opinion that it represents about one-half of the total used on the machine. When it is mixed with the wash water from the spray pipes, etc., it is pumped to the separating vessel there to be treated as above described. The overflow from this separating vessel, which ran to waste contained 0.064 of a pound of total solids per cubic foot, of which 96.3 per cent was mineral water. As this mineral matter consisted almost entirely of china clay, when determining it by ignition, due allowance was made for the combined waste in the clay. The volume passing away or lost was small, as the bulk of it was used for filling and emptying the beating engines. Obviously the loss of fibre from this source was negligible.

It would appear therefore that the amount of water run on to the wire cloth of the paper machine per ton of paper made was in the neighborhood of 7,000 imperial gallons, and that the bulk of the fibre and clay, passing through the wire as well as that gathered from other sources, was returned to the mixing box of the machine. In point of fact this fibre and clay represents a circulating quantity and when once its flow is adjusted, has no material influence on the weight of paper, this being regulated by the stuff valve on the regulation box.

What took place after the web of paper was formed on the wire was ascertained to be as follows:

I. The wet web of paper after passing the suction boxes of which there were two, and before passing under the couch roll contained 89.8 per cent of water.

II. The water left in the web after passing the couch rolls and before entering the 1st press rolls was 79.7 per cent.

III. The web finally contained 63.8 per cent water after passing through the 1st press rolls and before going on to the drying cylinders. This figure represents the amount of water to be evaporated by the drying cylinders and is equivalent to 1.76 tons per ton of paper made.

There were no second press rolls in operation on this machine while these tests were being made, as these rolls were undergoing repairs, but as the machine was narrow a uniform and good pressure could be obtained with those in action as shown by the low percentage of water left in the web after passing through them. The writer has found that in many cases where thin sheets of paper are being made, such as the above, there is practically no water removed by the second press rolls; that their function is simply to smooth and glaze the under surface of the web of web paper. A long series of observations extending over many years has established this and also the fact that seldom less than 63 per cent of water is left in the wet web after passing the second pair of press rolls. It is doubtful in the writer's opinion what advantage is to be gained in drying the paper, by using a third set of press rolls such as exist on many modern machines. In cases of fast running, adding to the number of presses, a more gradual pressure can be applied with less injury to the web of paper and to the felts, but the final moisture in the paper left for the drying cylinders to evaporate, ranges as a rule from 62 to 68 per cent.

The foregoing may be summarized as follows:

	Solids, i.e., mineral water and fibre. P.C.	Water. P.C.
Mixture going onto wire . . .	0.92	99.08
Before entering couch roll . .	10.20	89.80
After passing couch roll . . .	20.30	79.70
After passing 1st press roll . .	36.20	63.80

MAKING SAWDUST, WORK.

It is a fact known to few that more than 20,000 tons of wood flour, valued at \$300,000, are used annually in the United States in two widely different industries, the manufacture of dynamite and the manufacture of inlaid linoleum.

Wood flour is also used in making composition flooring, oatmeal paper, and in several other industries. It forms one of the means by which the huge waste product of our lumber mills is beginning to find some better means of disposal than the burner. Since a total of 36,000,000 cords of such waste is produced each year at saw-mills in the United States, of which about one-half goes into the furnaces as fuel while the rest is burned as refuse to dispose of it, there is no lack of raw material for industries which can develop ways of turning this waste to account.—From "Utilizing Lumber Waste," by L. M. Lamm, in the American Reviews of Reviews for May, 1916.

GROUNDWOOD PULP

Bulletin Published by the Forest Service Branch, United States Department of Agriculture, Giving a Report of the Tests Made on the Grinding of Steamed or Cooked Spruce for Mechanical Pulp and the Results of Tests on a Number of American Woods to Determine Their Suitability as Substitutes For Spruce.

By **J. H. THICKENS**, formerly Chief Engineer in Forest Products, now General Manager the Bathurst Pulp and Paper Company, and **G. C. McNAUGHTON**, Engineer in Forest Products.

This bulletin presents the results of tests on (a) the grinding of steamed or cooked spruce for mechanical pulp and (b) the results of tests on a number of American woods to determine their suitability as substitutes for spruce in the manufacture of ground-wood pulp.* If the price of news-print paper is to be kept at a reasonable figure, more efficient methods of converting spruce into pulp must be developed or else a cheaper wood substituted for the former. The results of experiments meant to develop greater efficiency in the grinding of uncooked spruce have already been presented in Forest Service Bulletin 127, "The Grinding of Spruce for Mechanical Pulp." That bulletin also discusses the influence of the many variable conditions in the manufacture of mechanical pulp, such as surface of stone, pressure with which the wood is forced upon it, peripheral speed, temperature of grinding, etc. Since the conclusions reached in regard to these are applicable to the production of pulp from coniferous woods in general, it is advisable to have a copy of Bulletin 127 at hand when reading the present one.**

All the tests described in this bulletin were carried on at the Forest Service ground-wood laboratory at Wausau, Wis., a branch of the Forest Products Laboratory, Madison, Wis., in co-operation with the American Paper and Pulp Association, which furnished all the pulp-making equipment for the laboratory, and with an advisory committee consisting of Messrs. G. F. Steele, chairman, and W. G. McNaughton, secretary, Nekoosa-Edwards Paper Co.; D. C. Everest, Marathon Paper Mills Co.; W. L. Edmonds, Wausau Paper Mills Co.; A. M. Pride, Tomahawk Paper Co.; and William Eibel, Rhinelander Paper Co.

*Acknowledgment is made to Mr. C. P. Winslow, Mr. Henry E. Surface, and Mr. S. D. Wells, engineers in forest products, and to Mr. S. E. Lunak, assistant chemist in forest products, Forest Service, for aid in the preparation of this report. Acknowledgment is also due Messrs. G. F. Steele, W. G. McNaughton, and L. M. Alexander, of the Nekoosa-Edwards Paper Co., and Mr. D. C. Everest, of the Marathon Paper Mills Co., for assistance rendered during the tests; also to Mr. C. W. Knapp, of the St. Louis Republic, and to Messrs. P. W. Schaeffer and E. D. De Witt, of the New York Herald, for providing the presses upon which the experimental papers were tried out. The maps in this bulletin showing the range of the various tree species were prepared in the Forest Service by Mr. William H. Lamb, assisted by Miss Georgia Wharton.

**Copies of Forest Service Bulletin 127 may be procured from the Superintendent of Documents, Washington, D.C., for 15 cents each.

Present Status of the Ground-Wood Industry.

Thirty-five to forty-five years ago news paper was made almost entirely of rags. Upon the introduction of the sulphite process of wood-pulp manufacture varying amounts of that product were added to the rag pulp, and later ground wood was made a part of the mixture, but only in small quantities. Ground wood was for many years nothing more nor less than a filler and not expected to add any strength to the sheet produced. There is shown in figure 1 the average contract price (f.o.b. mill) of news-print paper from 1874 to 1912. The effect of the introduction of the cheaper processes is evident.

In 1870 there were only 8 establishments reported which made ground wood, and the product manufactured during that year was valued at \$172,000. Ten years later, in 1880, 50 establishments produced \$2,257,000 worth of ground wood. In 1890, 82 establishments reported products valued at \$4,628,000. In 1900 there were 91 plants reported, which produced 280,520 tons of ground wood for sale, and 77 mills which produced 306,520 tons of pulp for their own

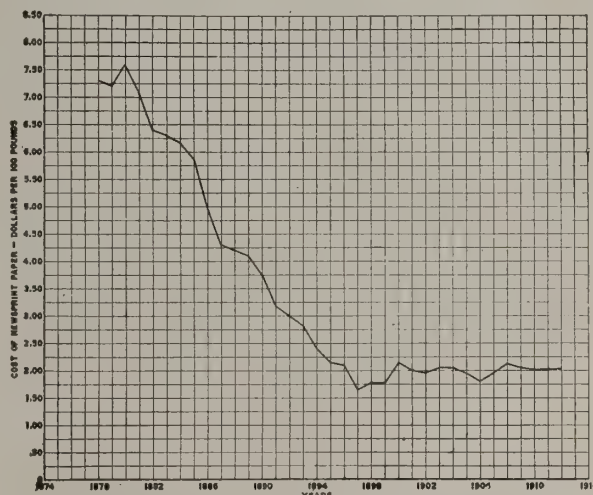


Fig. 1.—Average contract prices for news-print paper 1878-1912.

use, a total of 168 mills, producing 586,000 tons, valued at approximately \$9,300,000. In 1909 there were produced a total of 1,179,266 tons of mechanical pulp. Of this amount 310,747 tons were manufactured for sale or consumption in mills other than where produced, the value being \$5,649,466. The remainder, 868,519 tons, assumed to have the same value of that made for sale, was worth approximately \$15,780,000, or a total value of product of \$21,430,000. In 1911, 1,229,719 tons of mechanical pulp were produced, an increase of approximately 50,000 tons.

While the industry has developed very rapidly in the United States, the rate of development has not kept pace with the rate of consumption of the product. This is evident from a consideration of the imports and exports of both mechanical and chemical pulp over a period of years, as shown in figures 2 and 3. Figure 2 shows the imports of mechanical pulp, both free and dutiable, by months for a period of years, while figure 3 (curve B) shows the imports of mechanical pulp by years. The first of these curves is particularly interesting, because it shows the seasonal fluctuation of imports. Figure 3 (curve A) shows the imports and exports of wood pulp, both mechanical

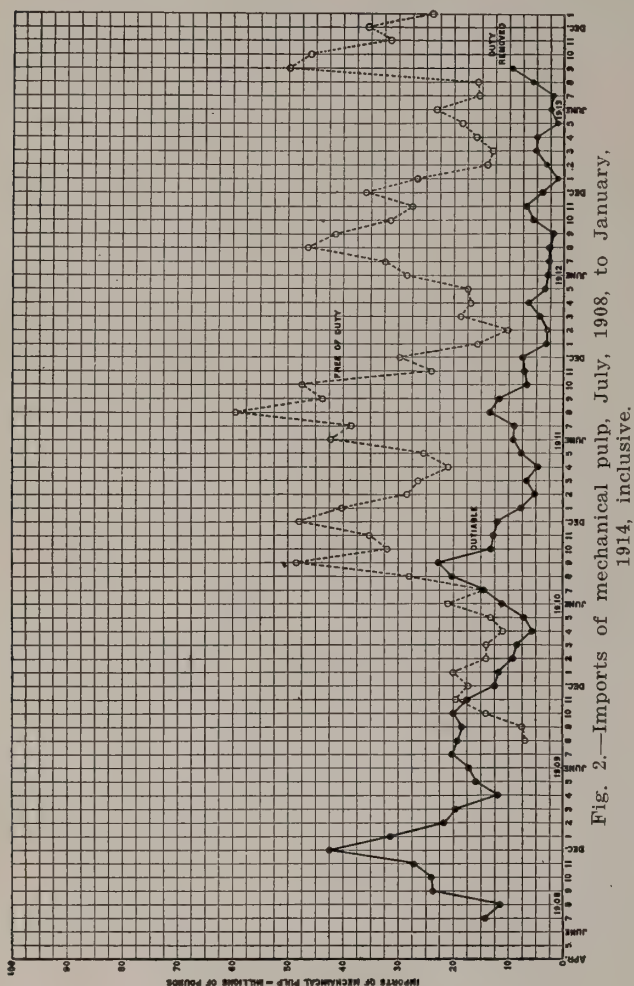


Fig. 2.—Imports of mechanical pulp, July, 1908, to January, 1914, inclusive.

and chemical. The increase in the amount of pulp imported is very marked, while the exports are comparatively small. It is evident from these curves that considerably more pulp will have to be manufactured at home before there can be any material expansion into the export trade.

Spruce furnishes by far the greater part of the wood at present used for mechanical pulp. Of the 1,314,141 cords consumed in the United States by the mechanical process in 1911, spruce supplied 1,121,703 cords, or 85 per cent, 822,743 cords of which were native wood and 298,743 imported. Of the 4,328,052 cords of wood used in the United States in 1911 for pulp of all kinds, spruce furnished 2,505,730 cords, or 57 per cent.

The annual consumption of spruce in this country for all purposes is something like 2,575,000,000

board feet. The available stand east of the Rocky Mountains was estimated in 1907 to be 35,000,000,000 feet, with an annual increment due to growth of 770,000,000 feet. While it is probable that the maximum annual consumption of spruce for lumber has been reached, and that that for pulp wood will scarcely go much higher, it is nevertheless clear that with the maintenance of anything like the present annual consumption the spruce forests of this country are threatened with exhaustion. Nor is it likely that the American consumer of spruce wood will be able to draw to whatever extent he wishes upon the Canadian supply. In 1900 the Province of Ontario prohibited the exportation of unmanufactured wood cut on Crown lands within the Province, and later the Provinces of Quebec (1909) and New Brunswick (1911) passed similar legislation. Further restrictive measures regarding the exportation of unmanufactured wood will undoubtedly be taken by Canada if the need arises.

The rise in the price of spruce over the 10-year period from 1900 to 1909, inclusive, reflects a steady increase in the consumption of mechanical pulp and a decrease in the available supply of the wood. In 1900 the average cost of spruce used for pulp-making pur-

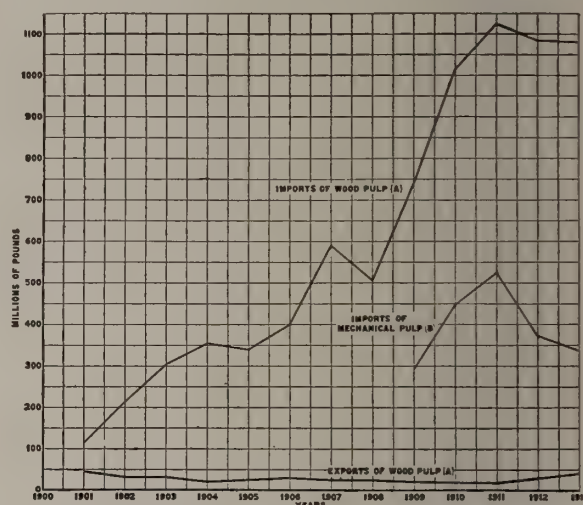


Fig. 3.—Imports and exports of wood pulp, 1901-1913, inclusive.

poses in the United States was \$4.28 per cord for domestic and \$6.50 per cord for imported material. In 1909 the average price for domestic spruce had risen to \$8.32 per cord, and for imported to \$11.34 per cord. During the same 10-year period the average cost of spruce can be used for the purpose. It was to answer this question, at least in part, that the experiments described in this bulletin were undertaken.

Present Methods of Manufacture.

The present method of manufacturing ground-wood pulp has been in use for a long time. Since 1867, when the mechanical process was first introduced in-

to this country, principles and methods have changed but slightly. The size and capacity of the grinders have been increased and the raw material changed from poplar to spruce, but otherwise the industry is following its first lines. As in any other industry, however, details of manufacture differ in different mills. Of two mills producing news-print paper, for example, one uses 135 horsepower to the grinder, the other 625. One employs a grinder cylinder pressure of 17.5 pounds per square inch; the other, with a cylinder of the same size, a pressure of 72 pounds. One runs at a peripheral speed of 2,660 feet per minute, the other at a speed of 3,540 feet. Such details of operation may differ among mills producing the same kind of paper even more widely than those just cited. Reports of power consumption show a range of from 31 to 135 horsepower per ton in 24 hours. The first value is undoubtedly wrong, since it has been demonstrated experimentally that such a low power consumption is impossible with the present grinding equipment.

Upon its receipt at the mill the wood is either stored for a considerable time in the yard or else is ponded. Before storage the wood is sometimes cut into 2-foot lengths, or in other cases is rossed.

The grinders ordinarily take a pulp-stone approximately 54 inches in diameter by 27 inches face. Some stones recently installed are as large as 60 inches in diameter and 48 inches face. Up to a few years ago natural quarried stones were the only kind used in the grinding process, but many mills are now experimenting with artificial stones. The grinding is usually carried on under conditions of high temperature brought about by admitting only small quantities of water to the pit of the grinder. In the cold-grinding process, which is sometimes used in the United States and very largely adhered to in Europe, an excess of water prevents any heating.

Upon leaving the grinder a large supply of water is added to the pulp, and the mixture is then screened. If it is to be shipped over a long distance, the pulp is run into laps by means either of wet machines or of hydraulic presses. Occasionally the pulp is dried on steam driers and run into rolls. When pulp is used where it is produced, except for the need of storing to provide a supply in times of low water, it is thickened by means of feltless wet machines or deckers and immediately manufactured into paper.

In the last few years a magazine pulp grinder has come into use, equipped with two pockets which are filled automatically from the magazine. The machine, however, has not been operated in this country to an extent which would enable a judgment to be formed regarding its efficiency and economy.

PART I.—THE GRINDING OF COOKED AND UNCOOKED SPRUCE.

EQUIPMENT USED IN THE EXPERIMENTS.*

Apparatus for Cooking.

Cooking treatments prior to grinding were carried on in a cylindrical closed steamer 3 feet in diameter by 8 feet high, designed for 75 pounds' working pres-

sure. The "steamer" was fitted with steam, water, and vacuum connections and the necessary gauges and thermometers for determinations of pressure and temperature. An open steamer 6 feet wide, 8 feet long, and 3 feet deep was also available for cooking treatment at atmospheric pressure.

Electrical Equipment.

In order to satisfactorily vary the conditions of grinding, secure adequate data on power consumption, and maintain the speed constant, it was necessary to instal a rather complex system of electrical drive and control for the grinder. The method of speed regulation was known as the Ward Leonard system, and by its means a very flexible arrangement was secured.

The installation consisted of a motor generator set of 460-kilovolt-amperes full-load capacity and a direct-current, variable-speed motor having a full-load capacity of 500 horsepower at 300 revolutions per minute. With the overload capacity it was possible to secure fully 75 per cent more power than the rating from each of the machines.

Three-phase 60-cycle electric power was applied to the synchronous motor of the motor generator set at 2,300 volts. The generator of the motor generator set was separately excited and by means of a rheostat in the field circuit direct current could be generated at any desired voltage from 100 to 700 volts. The direct-current motor connected to the grinder was also separately excited and the speed of rotation controlled by regulating the voltage applied to the armature, the voltage control being brought about by variation of the field current of the direct-current generator. The speed of the grinder motor could be varied from 100 revolutions per minute to 300 revolutions per minute, the capacity with overload at the same time varying from approximately 340 horsepower to 750 horsepower.

The efficiency of the direct-current motor could be determined very readily by means of curves showing the stray power and heat losses at different speeds and current loads and knowledge of the power supplied to the motor. The latter data were obtained by means of accurately calibrated indicating and recording electrical instruments.

The various pieces of apparatus used in the manufacture of the pulp were driven by individual direct-connected motors. The apparatus for wood preparation, 40-inch swing saw, and "Green Bay" barker, together with the wet machine vacuum pump, were driven from a single-belted motor. Some of the individual motors were of the variable-speed type, and as a result the pieces of apparatus to which they were connected could be driven at the most effective speeds.

Pulp Machinery and Auxiliary Equipment.

All of the pieces of machinery installed in the Wausau laboratory were of commercial size and design, and were loaned either by manufacturers or others interested in the work being carried on.

The grinder was built by the Friction Pulley and Machine Works. It took a stone 54 inches in diameter by 27-inch face and had three 14-inch cylinders. Each cylinder was provided with a pressure gauge and the water was supplied by two triplex pumps. The pressure at which the water was pumped was regulated by relief valves; pressures as high as

*A more detailed description of the equipment of the Forest Service laboratory at Wausau, Wis., is given in an unnumbered publication of the Forest Service, "Experiments with Jack Pine and Hemlock for Mechanical Pulp."

120 pounds per square inch could be obtained.

A recording thermometer gave a record of the temperature in the grinder pit. From the grinder pit the pulp was passed through a mechanically agitated sliver screen, then pumped to a storage tank by means of a 5-inch centrifugal pump, and from there pumped to a centrifugal screen. A variable-speed motor direct connected to the screen made it possible to obtain speeds of rotation from 400 to 600 revolutions per minute. Throughout the tests, however, the speed was maintained at 500 revolutions per minute. The plate in the centrifugal screen was perforated with holes 0.065 inch in diameter.

The tailings from the centrifugal screen were re-screened through a 12-plate Harmon diaphragm screen, the plates used being the Union Screen Plate Co.'s type B, cut with 0.012-inch slots.

The screened pulps from the centrifugal and the flat screen were united and run out on an Improved Paper Machinery Co.'s 3-roll hydraulic wet machine. The white water from the wet machine was pumped back to the sliver screen of the grinder by means of a 4-inch centrifugal pump. White water from the felts was run to the sewer, as was also the white water from the felt suction.

Paper-Making Equipment.

Portions of the pulps secured from experimental runs were sent to the Forest Products Laboratory at Madison to be run into paper. The apparatus available for the purpose when the earliest tests were made consisted of a pulp shredder, 12-pound Emerson beater, 2-plate flat screen slotted with 0.012-inch slots, and a 12-inch Fourdrinier paper machine. Later a Noble and Wood's Jordan engine was added to the equipment. This was used only, however, in the preparation for the paper machine of pulps made from miscellaneous woods. The stock which was run on the machine in carrying on series tests to determine the effect of variable grinding conditions on the strength of pulp was not Jordaned.

METHODS EMPLOYED IN EXPERIMENTAL TESTS.

Preparation of Wood.

All of the wood received at the laboratory was stored on skids in the yard and in most cases allowed to season before being used. It was received in several different forms; some cut from very large trees was split before shipping; some was rossed in the woods; but the greater part was in the form of round rough logs varying from 4 to 14 inches in diameter. The wood for test was sawed as required into 2-foot sections and barked, samples being taken for the determination of moisture and dry weight per cubic foot. The amount desired for the test was weighed and the diameter of each piece was measured. Tests were conducted as soon as possible after the wood was prepared and weighed.

In some cases it was necessary to remove knots before grinding, especially when the knots were likely to cause dirt in the pulp. This procedure was more often required for jack pine and aspen than for other woods.

In case the wood was to be treated it was piled in the steamer after having been carefully weighed. Depending on the conditions of the cook, the pressure was maintained constant at the desired value for dif-

ferent lengths of time. Cooks were made at steam pressures of from 5 to 75 pounds per square inch and for different lengths of time, from 1 to 12 hours. In some cases the wood was steamed and the condensation was drawn off as it formed; in others, the wood was immersed in water and boiled at different steam pressures, the condensation being blown off as soon as the temperature fell below that corresponding to the steam pressure in use. In some cases, after cooking the required length of time, the charge was allowed to stand until it had absorbed a large amount of water. After unloading, the wood was weighed and then ground as soon as possible. In several instances samples were taken after cooking and the bone-dry weight and the moisture were determined.

Grinding.

Before starting the test the desired surface was placed on the stone by means of a mechanically controlled burr or bush roll. The stone was then washed until free from loose sand and an impression of the stone was taken by means of carbon and coated paper. (See Forest Service Bulletin 127). The grinder pockets were filled, the pressure adjusted to the correct value, the recording instruments were placed in operation, and the test was then started.

The speed and pressure were maintained as constant as possible throughout each test. Pocket binding was eliminated by the constant observation of power applied to the grinder, a falling off in power consumption with pressure on indicating binding. When a piston was raised, instead of allowing the speed to increase, it was held constant by regulation of the voltage on the motor armature.

In series tests in which the surface of the stone was not altered, but the speed, pressure, or temperature were, the data secured may be more or less open to criticism, since the surface undoubtedly changed slightly from one test to another. However, this change was very slight.* Likewise, in short tests it was impossible to heat up the stone thoroughly and here also a very slight error was introduced.*

During the tests readings were taken of power, speed, pressure, temperature, and the like, the intervals of reading being 15 minutes in most cases, although 5-minute intervals were sometimes employed.

Losses in Conversion.

While it is highly desirable that the losses occurring in the barking of different woods be determined, it was impossible to investigate this point satisfactorily. Only small amounts of wood were used, in some cases not more than 8 cords, and determinations on such small amounts would not yield reliable results.

The amount of wood used during any test and the amount of wet pulp manufactured was accurately determined by weighing. Moisture samples were taken of both the pulp and the screenings and the bone-dry weight of each determined. In some cases the amount of wood fibre in the white water was secured by measuring the amount of white water used and determining the wood fibre in a sample of it. This proved rather unsatisfactory, and was discontinued on account of the difficulty in removing the wood fibre from the white water sample.

The yield of pulp has been calculated to a basis of 100 cubic feet of solid rossed wood, this factor being thought more satisfactory and accurate than a measured cord, and representing approximately the solid

*This point is discussed in more detail in Forest Service Bulletin 127, "The Grinding of Spruce for Mechanical Pulp."

content of a piled cord of 2-foot rossed wood containing 128 cubic feet.

Tests on the Paper.

The sample of pulp to be run into paper was first shredded and the moisture determined. The required amount was then weighed out and mixed and beaten with a weighed amount of bleached spruce slow-cook sulphite. In some runs, particularly those made on some of the pulps made from cooked woods, the sulphite was dispensed with. The mixture, usually 20 per cent sulphite to 80 per cent ground wood, was beaten until the fibres were separated, generally about 1 hour. The stock was then run out on the paper machine and an uncalendered sample was taken for strength and color tests.

No size, color, or loading was added to any of the sheets, the desire being to present the pulps made from different woods and under different conditions in as nearly comparable conditions as possible.

The uncalendered samples of paper were tested for tensile strength, lengthwise and crosswise, by means of a Schopper breaking length tester, and for bursting strength by means of a Mullen tester. The color tests were made with an Ives tintphotometer and measurements were made of the thickness of the sheet and weight per ream.

EFFECT OF PRELIMINARY TREATMENT OF SPRUCE.

Spruce has been used for many years as a raw material for groundwood pulp, but the effect of the production of pulp from it under varying conditions has

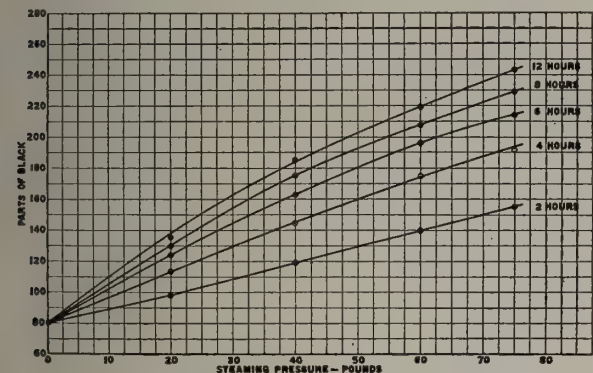


Fig. 4.—Effect of steaming pressure on color of pulp (average values of several runs on spruce).

never been given very careful study. Depending on the quality of the product desired, different conditions of grinding must be selected, and in some cases the wood must even be given a cooking treatment prior to grinding. In the manufacture of container board, where great strength is desired and the color is of lesser consequence, strength is often increased by the addition of sulphite or sulphate pulp, screenings, or old paper stock. In the manufacture of news-print paper, strength is desired too, but not nearly so much strength, the color, yield and finishing characteristics here being the prime consideration. The work which has been done on spruce has been carried on with the idea of attempting to increase the efficiency of grinding both from the standpoint of reducing the power consumption and increasing the yield from a cord of the raw material in either the cooking or ordinary ground-wood process, and to ascertain the influence on the quality and quantity of pulp produced by the variation of the grinding variables, such as surface of the stone, pres-

sure on the cylinders, speed, temperature, etc.

The cooking of wood prior to grinding is attended with a number of changes in the physical characteristics of the wood which greatly influence the quality of the pulp manufactured from it. The cooking condition must be chosen according to the use to which the pulp is to be put. For the manufacture of news-print paper from pitchy woods it is essential that the treatment be a very mild one, and that the duration of boiling or steaming and the temperature at which it is carried on be such as to allow of the fibre being as light in color as possible. Either the pressure, or corresponding temperature, must be low and the cook of long duration, or the pressure higher and the cook of much shorter duration. It is generally claimed that cooking the wood under pressure while immersed in water will yield a lighter pulp than steaming at the same pressure and for the same length of time, but this result has not been noted.

Boiling wood has certain disadvantages which are not found when the steaming process is used. There is a considerable loss of heat, and it is necessary to draw off condensed liquors to maintain the temperature at any desired value. This makes it necessary to pay greater attention to the process. If the temperature and duration of the cook are the same, the steamed or boiled wood should be practically the same in color and other physical characteristics. One decided advantage of steaming is the possibility of draining off the condensed liquors in a concentrated form. This is of great benefit when by-products are to be recovered.

In all of the experiments conducted in cooking wood prior to grinding, the temperature corresponded to the temperature of boiling at the steam pressure under which the cook was being made. Attempts were made to secure by-products, but the amounts of wood used were so small that this could not be done satisfactorily.

Influence of Pressure, Temperature, and Time of Cooking.

When the length of time of the cook is kept constant and the cooking pressure or temperature is varied, it

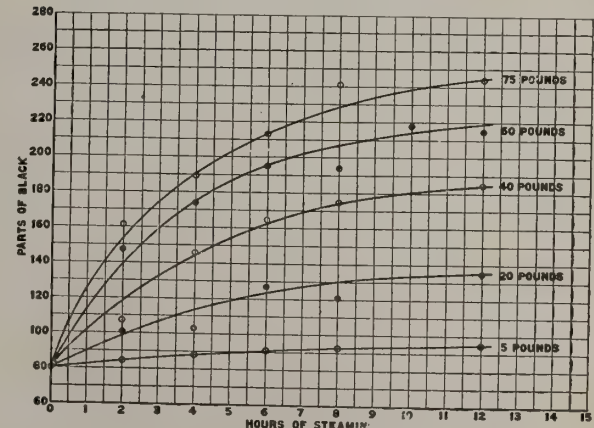


Fig. 5.—Effect of duration of steaming on color of pulp. (Average values of several runs on spruce).

is found that the color of the pulp made darkens greatly when these factors are raised, all other conditions being the same. This is demonstrated by reference to the curves in figures 4 and 5, where the amount of black in the color as determined by a tintphotometer is plotted against the cooking pressure and temperature. At some steam pressure the wood will char and the resultant pulp will be black; under this condition a maximum of 300 parts black would be secured. It

is probable that this steam pressure would not be very high, since the values of parts of black increase rapidly after 60 pounds pressure is reached.

The strength of the pulp increases with the length of the steaming period (fig. 6) and seems to reach a maximum in about 8 hours for both pressures. In figure 7 is shown the variation of the yield of pulp per 100 cubic feet of solid rosed wood, with the pressure of steaming and the duration of the cook. The marked effect of the duration of the cook, especially at high pressure, is evident. The yield decreases rapidly with increased pressure due to the dissolving action of the water and the transformation of portions of the wood into water soluble material which is washed out in the grinding process.

Variation of the period of cook also has a marked influence upon the horsepower consumption per ton of pulp. When wood is ground under the same conditions of grinder pressure, speed, temperature, etc., it is found that after a period of four to six hours of cooking the

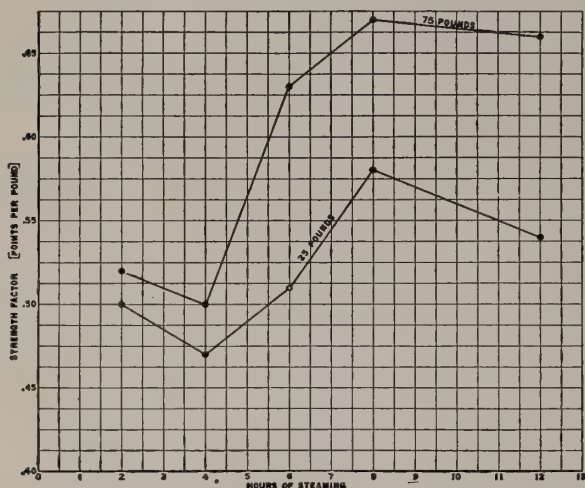


Fig. 6.—Effect of duration of steaming upon the strength of the pulp. (Spruce runs 199-209, inclusive).

maximum value of power consumption is obtained. For a greater or lesser length of time of cooking the horsepower consumption per ton decreases (fig. 8).

Other Factors.

The variation of the yield of pulp from 100 cubic feet of solid wood with the duration of cook and temperature of cooking has been pointed out. It would seem that most of the loss would occur in the cooking process itself, but determinations of the amount of bone-dry wood charged to the cooker and the amount of bone-dry material taken from it after steaming shows that the loss in cooking as volatile materials and water-soluble substances which leach out when the wood is in the 2-foot lengths is remarkably low, being from 5 to 8 per cent. It appears that the great loss which takes place in the production of steamed wood pulp occurs in the grinding process, either due to the dissolving of material which has been converted to a soluble state or the grinding of the softer portion of the wood—the springwood—to flour and the subsequent loss of it in the white water. There is a characteristic odor of burned sugar during the steaming of wood, and possibly some of the wood fibre is converted into sugar.

The condensed liquor from the steamer has a very corrosive action on the iron and it is possible that in order to satisfactorily protect the metal it might be desirable to add small quantities of sodium carbonate to

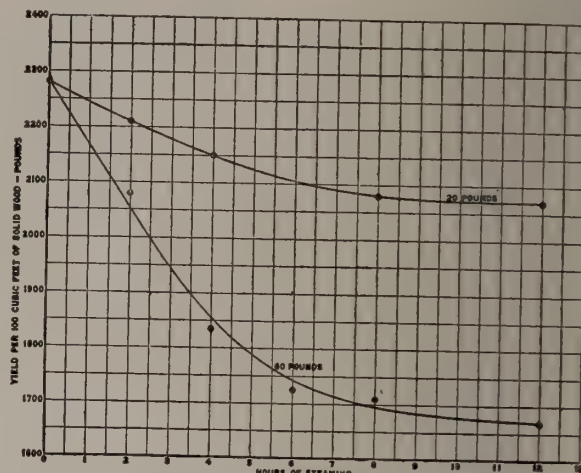


Fig. 7.—Effect of duration and pressure of steaming on the yield of pulp. (Spruce runs 103 to 107 and 114 to 119, inclusive).

the water when the boiling process is used. This, of course, would not apply when the wood is steamed.

The liquors which condense during the steaming of the woods may have considerable commercial value, particularly when resinous woods are used. The equipment employed in the Wausau laboratory was not of sufficient capacity to make it possible to study this problem carefully, but an indication of the nature of the condensed liquor can be obtained from the following analyses of material secured from a mill steaming wood commercially, in which case approximately 5 cords of wood were used for each charge. Unfortunately no means were available for measuring the total condensed liquor, and for that reason the amount of the materials can not be expressed in quantity per cord.

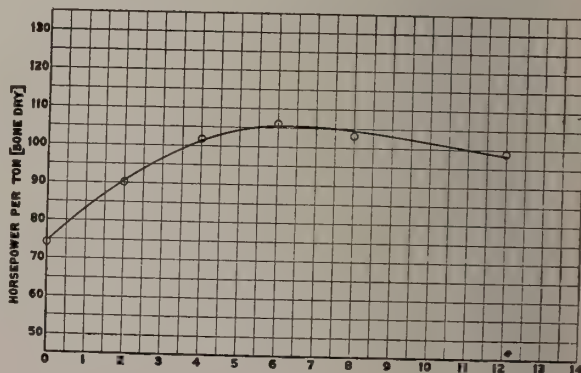


Fig. 8.—Effect of duration of steaming on power consumption per ton of pulp. (Spruce runs 114-119, inclusive).

It will be noted that two samples were analyzed, one of which was a residue from evaporation of a condensed liquor and the other a sample of the liquor from another cook. The woods steamed were a mixture of jack pine and tamarack in the ratio of 67 per cent of the former to 33 per cent of the latter.

Canadian Press Association

Annual Meeting Held in Toronto on June 1st and 2nd.

The 58th annual meeting of the Canadian Press Association, held in Toronto early in the month, was a real gathering of the Clan. The attendance was large, and the old-time enthusiasm was given full vent in all the discussions. The new million dollar Technical School was used for the Convention, and the accommodation afforded lent greatly to the success of the gathering.

Of course, discussion was the main item and feature of the Two Days Confab. Discussion on every subject under the sun, usually centered, however, on such subjects as paper prices, editorial matters, postage rates, etc. The press of Canada has done a great work during the past two years, contributing greatly to Canada's success in meeting the demands, military and otherwise, of these strenuous times, and it is seldom that such opportunity is afforded for discussion of the many questions directly affecting the producing end.. Canadian publishers have maintained a relatively high ideal, and the spirit of the Convention was that the standard of service, usefulness and efficiency in Canadian journalism should be placed upon as high a plane as possible.

The following officials were elected: President, John Ross Robertson, Telegram, Toronto; Vice-President, C. F. Crandall, Star, Montreal; Secretary-Treasurer, J. E. Atkinson, Star, Toronto.

Board of Directors: John Nelson, World, Vancouver; J. H. Woods, Herald, Calgary; R. L. Richardson, Tribune, Winnipeg; E. T. Macklin, Free Press, Winnipeg; W. J. Kerr, Province, Regina; W. J. Blackburn, Free Press, London; J. E. Atkinson, Star, Toronto; J. Ross Robertson, Telegram, Toronto; J. F. Mackay, Globe, Toronto; Norman Smith, Free Press, Ottawa; M. Chrevier, Le Devoir, Montreal; E. F. Slack, Gazette, Montreal; E. W. McCready, Telegraph, Halifax; G. F. Pearson, Chronicle, Halifax; C. F. Crandall, Star, Montreal.

Following the Convention some two hundred members of the Association enjoyed a cruise up the Lakes to Fort William and Port Arthur, where they were royally entertained, and the great grain handling facilities at the Head of the Lakes were inspected. On the return journey the members stopped off at the Soo, where the plant of the Lake Superior Division of the Spanish River Pulp and Paper Co. was inspected.

The next annual meeting of the Association will be held in Toronto, April 26 and 27th, 1917.

THE YIELD OF CELLULOSE FROM WOOD.

Methods have been perfected at the Forest Products Laboratory, Madison, Wis., for analyzing the chemical constituents of wood. Six American species of woods were analyzed at the laboratory for their chemical constituents. An interesting fact brought out by these tests is that the production of cellulose in modern pulp-making varies from 5 to 20 per cent less than the amount present in the wood, indicating the extent to which yields of pulp may be increased.

	Residue from evapo- ration of liquor. Per cent.	Sample of liquor. Per cent.
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Total solids	70.10	2.05
Soluble solids	15.89	1.95
Reducing sugars	13.60	.83
Tannins	9.85	.092
Ash	5.71	0.049
Acetic acid (total)	1.41	.162
Formic acid (total)	4.31	.042
Moisture		97.95

The total and soluble solids and tannin were determined according to the methods outlined by the American Leather Chemists' Association.

The boiling or steaming of woods results in the formation of a natural size from the wood substance or some of its constituents. This sizing action is particularly noticeable in the production of pulps from the hardwoods—birch and aspen—which are not pitchy. All paper produced from cooked woods, pulped by the mechanical process, show the characteristic water-resistance qualities and hardness of hard-sized papers.

Tests on papers made from steamed and unsteamed woods show that the unsteamed pulps do not give as high percentage stretch as the steamed, even though the unsteamed pulps were mixed with 20 per cent of bleached spruce sulphite. Pulps made from cooked woods should be given satisfactory beating treatments to make them usable for different purposes. Like chemical pulp, there is a marked influence on the resultant paper when the pulps are given different beating treatments. The sheets become more brittle after a prolonged beating, but give high strength tests.

(A further instalment of this paper will appear in the next issue).

THE HA HA BAIE SULPHITE MILL.

The Ha Ha Baie Sulphite Company, of Chicoutimi, Province of Quebec, Canada, has announced the awarding of the contract for the construction of its new paper pulp plant at Bagotville, Chicoutimi County, P.Q., Canada, to the J. G. White Engineering Company of New York, under the direction and design of Mr. Hardy S. Ferguson, paper mill engineer, also of New York.

This plant which marks a decided step in the pulp manufacturing activities of Northeastern Canada, will embody the latest improvements in design and the initial installation will have a capacity of 120 tons of sulphite per day.

The mill buildings of brick, concrete and steel, will be erected on the shores of the Ha! Ha! Bay, on the Saguenay River, and will occupy a space of approximately five acres, and besides the usual rail facilities will be provided with a system of wharves, accommodating ocean going vessels. Work at the site has begun and it is expected that the plant will be producing pulp early in 1917.

Mr. J. E. A. Dubuc, President of the North American Pulp and Paper Company, and General Manager of the Chicoutimi Pulp and Paper Company, will be at the head of this new enterprise.

PULP AND PAPER NEWS

The Spanish River Pulp and Paper Mills, Limited, are installing at their plant in Sault Ste. Marie, Ont., a 110 inch Black and Clawson cylinder machine which will be ready for operation this fall.

Gummed Papers, Limited, of Brampton, Ont., report business as being very brisk. They are building an addition to their plant and have installed machinery for printing all kinds of gummed tape and gummed labels in roll form. Another machine has been installed for making waterproof case lining and cloth lined papers. The latter has become quite extensive and include kraft and manila lined for wrapping currency, also white and blue envelope stock, cloth lined, for the making of legal and bank envelopes and for government use. Gummed Papers, Limited, of which E. R. Colbert is Vice-President and Manager, are also making a cloth lined board for peak caps and lining of glove cuffs.

John Martin, of the John Martin Paper Co., Limited, Winnipeg, has sent out to the trade an instructive and interesting booklet on, "Has the price of paper advanced according to the increased cost? He asks are the manufacturers taking advantage of the present shortage? Mr. Martin says that the Canadian manufacturer of book and writings has not increased his price sufficiently to cover advanced cost of production, and states that he finds the mills buying a great deal of their material on the price prevailing on date of delivery. Mr. Martin thinks that wholesale paper houses should accept these terms from the paper manufacturer and in turn sell goods on the same basis. He believes that this would be an ideal manner in which to pass on the increase from the manufacturer of raw materials to the consumer, wholesalers only reserving what margin is considered fair.

At the annual meeting of the Globe Printing Co., held in Toronto last week, the report showed that, in spite of the difficulties of the past year, the finances were in a satisfactory state and the customary dividend was paid. W. G. Jaffray was re-elected President. Just before the meeting the tragic news was received by two of the directors, A. F. Rutter and E. T. Malone, K.C., that their sons had been killed at the front and resolutions of sympathy were passed.

Motor reciprocity now extends between Ontario and 11 states of the Union. The good work which was started by Hon. Francis M. Hugo, secretary of the Remington Paper and Power Co., who is also Secretary of State for New York, and the Ontario Motor League, first resulted in interchange of licenses between that state and Ontario, then Michigan was added, and now Maine, Connecticut, Vermont, Maryland, Ohio, Pennsylvania, Wisconsin, Minnesota and Rhode Island.

At the recent annual gathering of the Canadian Press Association, held in Toronto, one of the most interesting subjects considered was the raising of newspaper subscription rates for weeklies from one dollar to a dollar and a half a year owing to the advance in the cost of news-print, ink, etc. A number of weeklies have already done so, and now action in this direction

is being taken by district press associations. While, of course, some subscriptions will be lost owing to the rise, the publishers generally agreed that they would get more revenue in the end and that most of those, who temporarily discontinued, will come back at the dollar and a half rate.

The capital stock of the Automatic Paper Box Company, Limited, has been increased from \$125,000 to \$200,000 by creating seven hundred and fifty shares of one hundred dollars each.

A charter has been granted to the Peerless Pulp Co., Limited, of Thorold, Ont., with a capital stock of thirty thousand dollars. The company, which is composed of Ed. R. Foley, Joseph M. Foley, of Thorold, H. A. Constantine, of Niagara Falls, N.Y., and others, has taken over the plant of the Inland Pulp and Paper Co., and is putting the ground wood mill in operation again after being idle for some months.

E. H. Macklin, President of the Winnipeg Free Press, was in Toronto and Montreal during the past few days inquiring into the news-print situation. His paper and others in the west have made material reduction in size as, owing to the high water on the Rainy River, there is a possibility that the news-print mills at Fort Frances and International Falls may have to close down. As most of the publishers in the West get their supply from these plants the situation is none too reassuring and radical steps are being taken to meet the threatened famine in news-print.

Lieut.Col. Fred M. McRobie, of the 3rd Victoria Rifles, Montreal, has been authorized to raise a Battalion for overseas service, and it will be known as the 244th. Among the officers are Capt. J. H. A. Acer, president of the Canadian Pulp and Paper Association. Another prominent paper man, who is right to the front at the present time recruiting a new Battalion, the 227th, is Lieut.-Col. C. H. L. Jones, of Sault Ste. Marie, who has been manager of the operating department of the Spanish River Pulp and Paper Mills, Limited, and has been granted leave of absence by his company to attend to his military duties.

The Riordon Pulp and Paper Co., Montreal, have declared their regular quarterly dividend of one- and three-quarter per cent on the preferred stock of the company. The extension and improvements to the Merrittton plant will be completed by August 1st.

Plans are now well under way for the new mills of the Northumberland Paper and Electric Company, which will be erected at Campbellford, Ont., to replace the old one which was burned down some months ago. The machine room has already been staked out and operations will be rushed. The new mill will be much larger than the former one.

The period of existence of the Blind River Boom and Slide Co., Limited, has just been extended for a further period of ten years from May 26th, 1916.

A charter has been granted to the National Wood Manufacturing Co., Limited, with headquarters at South River, Ont., and a capital stock of one hundred

and twenty-five thousand dollars, to export, sell and deal in timber, lumber and wood of all kinds. Other extensive powers are given to the company, which is composed of W. J. Ard, C. A. Jackman, Albert Howard, and T. J. Ryan, of South River.

The Red Cross Society, of Toronto, estimate that they can collect in one year the sum of twenty-five thousand dollars from the campaign of conservation of waste paper, rags, etc., if the public continue to support the work as enthusiastically as they have. During May the society received sixteen hundred dollars. Some time ago the Society were offered a lump sum of nine thousand, five hundred dollars by the collectors of waste materials in Toronto, if they would cease their campaign, but this was declined as it is contended that about ninety-five per cent of the material received would have been destroyed or wasted and, therefore, it is not regarded as a hardship to the dealers. A new warehouse has been secured by the Red Cross at the foot of York street, and there are now six motor trucks which make the collection. Two ladies have offered to do the work of driving motor trucks as male operators have become scarce owing to enlistments.

J. H. McNairn, the well-known paper representative of Toronto, is interested in the proposition to erect at Dansville, N.Y., a plant for the recovery of wastage from waxed paper factories and obtain from this by-product an important saving for those engaged in waxing business. A number of waxed paper factories have responded with offers of waxed cuttings sufficient to keep a three ton plant fully supplied. The mill will have two cylinder machines which will take care of the pulp and make it into stock for which there is a good market.

A charter has been granted to the R. O. Smith Co., Limited, of Orillia, Ont., with a capital stock of \$50,000 to carry on the business of wholesale and retail book sellers, publishers, printers, envelope manufacturers, etc. Among the incorporators are R. O. Smith, O. G. Smith, Robert Curran and others, of Orillia.

A charter has been granted to the Makers of Canada (Morang) Limited, Toronto, with headquarters in Toronto and a capital stock of \$75,000, to manufacture, publish and deal in all kinds of books, periodicals, and stationers' supplies, and to carry on a general publishing business. The capital stock of \$75,000 is divided into three thousand shares of twenty-five dollars each, or which one thousand shares are preference shares.

W. J. Gage, President of the Kinleith Paper Mills, St. Catharines, Ont., and of W. J. Gage and Co., Toronto, was re-elected a director of the Imperial Bank of Canada at the recent annual meeting.

J. H. A. Acer, of the Laurentide Co.; J. B. Rolland, of the Rolland Paper Co.; C. Howard Smith, of the Howard Smith Paper Mills Co., and Eugene Tarte, of La Patrie Publishing Co., Montreal, have been elected city representatives of the Montreal Branch of the Canadian Manufacturers' Association.

Charles V. Syrett, manager of the Victoria Paper and Twine Co., Toronto, has returned from a visit to the mills in various parts of Quebec.

The Raymond Concrete Pile Co., Limited, of Montreal, have been awarded the contract for the foundations of the St. Maurice Paper Co's new plant at Cap de la Madelaine. There will be between 400 and 500 piles. The George A Fuller Company, Limited, are the general contractors.

The employees of the J. R. Booth Company at the Chaudiere have come to the decision that they will not work any more on Sundays, either morning or night, during the summer months. As a result the Booth company has been forced to closed down the paper mills entirely all day Sunday. Formerly the men on the machines worked until six o'clock on Sunday morning and then commenced again at midnight. By the new schedule which went into force on Sunday last, the mills close at midnight on Saturday and do not reopen until six o'clock on Monday morning.

The War Office has called for another Canadian Forestry Battalion of 1,500 men. The 224th Battalion, under command of Lieut.Col. Alex. McDougall, has done such excellent work in England and Scotland in aiding the naval and shipbuilding industries that the second battalion of this nature has been authorized at the request of the British authorities, and recruiting will begin immediately in the lumbering districts. Lieut.-Col. J. B. White, of Montreal, formerly of the Riordon Pulp & Paper Company, and now with the 224th Overseas, has been recalled to organize and command the new regiment.

D. B. McDonnell, of Winnipeg, has been authorized to construct a water-power project at Grand Rapids on the main Saskatchewan river, to operate pulp and paper mills near the site. Within two years \$150,000 must be spent by the promoters and at least 5,000 horse-power developed within five years. If any is sold, the government reserves the right to control the rates and also to exact rental.

A. M. Huestis, the well known paper mill representative of Toronto has gone on a visit to England where his eldest daughter, Miss Gladys Webster Huestis, will be married this month to Capt. G. Ashworth Fellowes, eldest son of Mrs. Rockliff Fellowes, of Ottawa.

New prices have gone into effect on various kinds of board, the increase being about ten per cent. Straw-board is now selling f.o.b. Toronto at \$45, filled board at \$48, and folding box board at \$52. All the mills are rushed to the limit and find it difficult to make deliveries short of two months or more.

The Peerless Pulp Co., Limited, of Thorold, Ont., which has just obtained a charter, is a subsidiary company of the Foley-Rieger Pulp and Paper Co. of that town. The company has taken a ten year lease of the Davy Pulp and Paper Co., and will operate the same from July 1st next. The output is about ten tons per day. With the taking over of the Inland Pulp and Paper Co. and the Davy plant, the Foley-Rieger Co. will have, along with their own mill, an output of some fifty tons of ground wood a day. Ed. P. Foley is Vice-President and Manager of the Peerless Pulp Co. All three industries have large orders ahead and will be operated to fullest capacity.

BRITISH INQUIRY.

A reputable and well-known firm of paper makers' agents in London, Eng., have written asking for information concerning sulphite mills in this country desirous of making connections in England. Firms in a position to do business in the United Kingdom may have the name of the enquirer on application to the Editor.

CANADIAN INDUSTRY, COMMERCE AND FINANCE.

For long Canadian business men, and those in countries doing business, or prepared to do business, with Canada, have felt the need of a concise and accurate source of information on the industrial, commercial and financial methods and terms of Canadian business. Such a volume has now been prepared, and is published by the Industrial and Educational Press, Limited, 45 St. Alexander St., Montreal. The book has been written and compiled by J. J. Harpell.

The opening chapters of the book are devoted to a discussion of modern business methods as applied to Canada in which the author deals with the three divisions—industry, commerce and finance—in a lucid and authoritative style. The aim is to present the information in such a manner as to make it easily comprehensible. This is especially valuable to the young business-men or to foreigners doing business with Canadian merchants, in that the author touches every phrase of his subject with authority. This information is especially useful to Canadian merchants at the present time when so many firms are beginning to do an export trade, to which a considerable portion of the discussion is devoted.

The first chapter on industry deals with each of the various branches of Canada's industrial development, in point of extent, production and possibilities. In his treatise on commerce the author treats the subject in all its phases. Foreign commerce, domestic commerce, ocean transportation, inland water transportation, railroads, etc., are taken up in turn and the methods and terms explained. The various markets of the world are described, and a section is devoted to weights and measures in use the world over. The chapter on finance deals with a wide array of subjects. The author first describes the development of banking and instruments of credit, and then deals with all methods in present use describing each separately. Foreign exchange, bills of lading, and shipping receipts are dealt with. Mortgages and liens, deeds, stocks, bonds, and all classes of insurance are given attention in this chapter.

Another useful and principal feature of the volume is the trade index or directory of all marketable commodities and Canadian producers. This list embodies a description of most commodities and accurate lists of the Canadian producers of each, with addresses. This department should be especially useful in that provision is made for keeping it as up-to-date as possible.

The book is published by the Industrial and Educational Press, Limited, Montreal, as a companion volume to the Journal of Commerce, issued weekly in that city, and is included with each subscription to the Journal of Commerce at the regular price of three dollars a year.

NEW USE FOR SAWDUST.

A new use for sawdust is suggested by a recent contributor to *Factory*, who says that if sawdust is boiled in a saturated solution of carbonate of soda until the wood turns a dark brown the resulting liquid partakes of many of the properties of liquid soap and may be used for all sorts of cleaning purposes, though lacking the injurious caustic effect of common lye.

THE PAPER TRADE IN INDIA.

The total consumption of paper in India at present is estimated at over 75,000 tons. Of this quantity about 29,000 tons are manufactured in India, and the remainder is imported, mostly high class stationery, such as not paper, bank and bill paper, parchment, ledger, cream laid, tissue, etc. There are only eleven paper mills in India, and three of these did not actually produce during the year under review. The value of locally manufactured paper has remained practically steady, while that of foreign imports has increased to about double that of the paper made in Indian mills. The industry in India, with one or two exceptions, is not flourishing.

Raw materials, such as rags, hemp, savanna grasses, other than baib and sabai grass, and bamboos are abundant in India. Trials in the manufacture of bamboo pulp have been carried out on a commercial scale, and concessions for the extraction of bamboos have been granted to two firms in Burma and Bengal. Paper-making materials, mostly wood pulp, were imported to a great extent from the United Kingdom, Austria-Hungary, Sweden, and Germany. Of chemicals, the bleaching materials, caustic soda, etc., are imported chiefly from the United Kingdom. Rosin is already being manufactured by the Forest Department of the United Provinces from crude resin obtained by tapping pine trees in the Himalayan forests, and the product is taken by the paper mills in India.—U. S. Consular Report.

RE-OPEN WESTERN OFFICE.

The Jeffrey Manufacturing Company of Columbus, Ohio, announce the re-opening of their Northwestern Branch Office at Seattle, Wash., and the appointment of Mr. Percy E. Wright, Consulting Mechanical Engineer, as District Manager for Oregon, Washington, Alaska, British Columbia and Alberta. Mr. Wright, who has been in the Northwest since 1910, and whose connection with this company, dates back to 1902, has had a wide and varied experience and training in the handling of the Jeffrey Line in the Engineering, Construction, and Sales Departments, which will enable him to be of great assistance to customers in solving their elevating, conveying and transmission problems.

RUSSIA'S FOREST AREAS.

European Russia, exclusive of Finland, has a timber area of 345,000,000 acres, of which 214,000,000, or 61.8 per cent, belong to the State, as do most of the forests in Asiatic Russia, which have a known area of 217,000,000 acres, while vast areas in Eastern Siberia remain to be surveyed. The proportion of timbered land in Russia represents about 35.5 per cent of the total area. The forests in the five governments of Archangel, Vologda, Perm, Viatka, and Olonetz have an area of 233,000,000 acres.

COMERON SLITTING AND REWINDING PRINCIPLE.

An interesting booklet on the Slitting and Rewinding machines manufactured by the Cameron Machine Company, Brooklyn, N.Y., has just come to hand. The demand for all kinds of paper in roll form has grown rapidly and the Cameron Machine Company have endeavored to keep pace in the perfecting of their machines to suit all purposes. The booklet, which is entitled "Cameron Slitting and Rewinding Principle," is well illustrated and contains a host of information concerning their machines.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

Mr. N. Dyson, who for a number of years, was associated with J. K. Shyroek, at Second and Vine streets, Philadelphia, Pa., has purchased the interest of the estate of J. B. Shyroek in the business. Mr. Dyson will continue the business without any change in the management as the Dyson Paper Board Company.

* * *

The Bureau of Foreign Domestic Commerce, Washington, has an inquiry (No. 21,110) from an American consular officer in England, stating that a firm of wholesale and retail dry goods merchants in his district desires to receive quotations, c.i.f. destination, in British currency, from American manufacturers' of fibre tape, gummed paper tape, manila box cord, and wrapping paper, similar to sample which may be examined at the Bureau or its district offices.

* * *

An announcement has been made that the Combined Locks Paper Company, of Combined Locks, Wis., has decided to extend its plant. Details of the additions have not been given out, but it is announced that among the increase to be made in machinery equipment will be the installation of one new paper machine.

* * *

The DeGrasse Paper Company, with mills at Pyrites, N.Y., met with a serious setback recently when the plant was forced down by the breaking of a retaining wall, which flooded the mill and did thousands of dollars damage. The whole trouble is believed to be due to the faulty construction of the retaining wall, which was only about a foot thick at the top. When the DeGrasse Paper Company first built, advantage of an island dividing the Grasse River was taken. Across the channel on the east of the island the retaining wall was erected. A dam was put across the west channel. From the retaining wall runs the flume to the mills, which lie in the old channel and directly in line with the river above. For a distance of 150 feet below the wall dirt was drawn so that it filled the channel so that it was used as a natural roadway to the island.

* * *

Hardy S. Ferguson, of New York, is engineer in charge of the erection of new pulp mills for St. Maurice Paper Company, near Three Rivers, Quebec. This is to include both sulphite and sulphate mills of considerable capacity. These installations are expected to be representative of the most recent ideas and developments and will in every respect be thoroughly standardized as to their general layout, and the general design of their equipment.

* * *

C. C. Hockley, who has been in charge of the engineering department of the Union Bag and Paper Company during the past two years, has been promoted to the position of manager of the manufacturing department of the St. Maurice Paper Company, Ltd., at Cap de Magdeline, Quebec, Canada. The St. Maurice

Paper Company, Ltd., is controlled by the Union Bag and Paper Company, and is now erecting a newsprint mill, a sulphite mill and a kraft mill at the location just mentioned.

* * *

The Wisconsin River Pulp and Paper Company, at Steven's Point, Wis., has received an estimate on the cost of the proposed new dam across the Wisconsin River. The figure submitted indicates the structure cannot be built for less than \$75,000. The proposed new dam will be about 2,500 feet in length and about eighteen feet high. Nine or ten half moon gates will be installed and they will be electrically operated.

* * *

According to officials at the Forest Service, the waste product of saw-mills in the United States, including that fed to the furnaces as fuel is estimated to be 36,000,000 cords per year, and the equivalent of 2,880,000,000 cubic feet of solid wood substance. About half of it has no use whatever, but is usually burned to get rid of it.

* * *

The Howland Pulp and Paper Association, Inc., with a capital of \$50,000 divided into 500 shares, has filed articles of incorporation with the secretary of state of Vermont, to carry on business of pulp and paper manufacturers. The principal place of business will be at Brattleboro. The incorporators are: A. M. Blandin of Bath, N.H.; Charles G. Staples, H. E. Eddy, and H. E. Whitney, all of Brattleboro.

* * *

According to reports from Hattiesburg, Miss., that town has accepted the proposition of the parties identified with the Louisiana Fibre Board Co., of Borgalusa, La., to build a paper mill at that place. Mr. Wright, president-treasurer of the latter company is quoted in the New Orleans papers as saying that work will begin within sixty days.

* * *

The annual meeting of the St. Regis Paper Company was held at Watertown, N.Y., last month. The directors elected were: G. H. P. Fould, Harry P. Gould, of Lyons Falls, G. W. Knowlton and Floyd L. Carlisle, of this city, and J. Henry Dick, Alvah Miller, Jonathan Bulkley, J. A. Mollenjauer, and A. T. Heath, of New York. The following officers were also elected: G. H. P. Gould, president; Alvah Miller, vice-president and secretary; Floyd L. Carlisle, treasurer; James M. Sexsmith, assistant secretary and treasurer, and Harold P. Gould, general manager.

* * *

At a first meeting of the creditors of the Montezuma Fibre Company, at Syracuse, N.Y., J. G. Hotaling was elected a trustee. The assets of the corporation are given as \$2,000, and liabilities of \$69,179. The company had a plant at Montezuma, and used flag which grew on the marshes as raw material.

The British Paper and Pulp Trade

Report of Trade Commissioner, J. T. Lithgow to the
Department of Trade and Commerce Under
Date of May 12, 1916.

Among the many industries seriously affected by the war is that of paper-making, and it is not improbable that Canada may ultimately reap considerable advantage from the disturbance that has taken place in the trade.

In the early days of the war the Government requisitioned much of the mercantile tonnage for naval and military purposes, and as a result there were fewer vessels available for trading. The natural outcome of this was a dislocation of the import and export trade of the country, as the demand for steamers far exceeded the supply, and freight rates were raised to a very high level. After some months the authorities took the matter in hand and endeavored to check the exorbitant freight rates by controlling exports and imports, but notwithstanding the many severe restrictions imposed, the vessels available were still far short of the number required, and rates continued high.

In consequence of the scarcity of steamers and the dearth of those which could be chartered, the paper pulp manufacturers and merchants of Sweden protested vigorously against the high prices which they had to pay for coal to run their mills, and threatened to retaliate by prohibiting the export of pulp to Great Britain. The Swedish Government did subsequently prohibit the export but explained that they did not do so as a retaliatory measure but because the output of the mills was so small—in consequence of the scarcity of coal—that there would not be more than sufficient to supply their own paper trade.

Imports Prohibited.

The attitude of the Swedish Government apparently raised the whole question of pulp importation into this country, and the British Government took advantage of the situation created to add pulp to the list of commodities over which they exercised control. After repeated conferences with members of the paper trade and newspaper owners, the Government decided to restrict the import of pulp to two-thirds of the imports of a normal year, and this regulation is now in force.

Price of Paper.

The immediate effect of the restricted imports has been to raise the value of paper to about three times its usual price, and there is every appearance of prices soaring still higher. In order to counteract the high prices and to prevent the wealthier firms from acquiring the whole of the supplies to the disadvantage of the smaller firms, the Government stipulated that users of pulp must not consume more than two-thirds of their normal consumption, and in this way it was hoped that by restricting consumption in the same proportion as imports, values would remain at their old levels. But in spite of the regulation the object has not been achieved and prices are still rising.

Imports of Pulp.

The great change in the paper trade may be gathered from a brief examination of the Board of Trade returns. Last month the total importation of chemical pulp from Sweden was less than 1,000 tons which com-

pares with almost 10,000 tons in the corresponding month last year, while only 150 tons of wood pulp was brought in from Sweden. Notwithstanding that the chemical pulp imported was only one-tenth of that brought in in April, 1915, the value has not fallen by anything approaching an equal proportion. For the first four months of year the total quantity of chemical dry wood pulp imported was 53,361 tons, the principal contributors being Sweden and Norway. For the same period in 1915 the quantity imported was 65,505 tons and for 1914 79,643 tons. The difference between 1916 and 1915 was 12,144 tons less for 1916, yet the value of the 1916 importations was £130,000 more, being £733,007 against £602,605, while the value of the 1916 importations compared with those of 1914 was fully £70,000 more although the quantity actually brought in was 26,000 tons less, the 1914 importations being 79,643 tons.

The falling off in the imports of paper itself have not been so marked as in pulp, but it is anticipated that the situation so far as this is concerned is likely to get worse rather than improve. For the first four months of the year the quantity of paper for printing or writing imported on reels was 374,175 cwts. against 544,253 cwts. in 1915 and 634,463 cwts. in 1914 with respective values of £282,804, £276,146 and £364,652. The importations not on reels for the same period were 191,393 cwts., 239,375 cwts. and 239,375 cwts., valued at £233,052, £196,502 and £279,161. For the first four months, the quantity of paper for packing and wrapping was 1,278,372 cwts. against 1,090,725 cwts. in 1915, and 1,418,051 cwts. in 1914, the values for the three years being £1,302,238, £752,992 and £994,090.

Strawboard and Millboard.

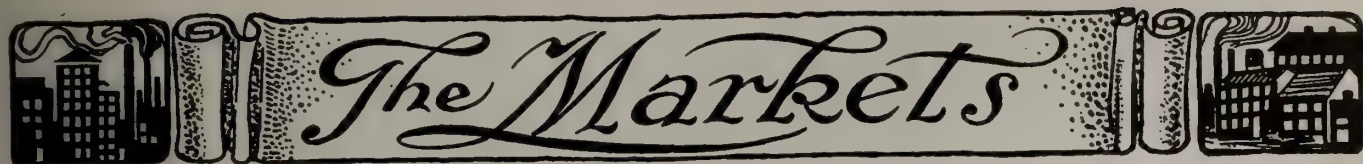
Strawboard has been imported in larger quantities than last year, 1,433,905 cwts. being brought in against 1,089,758 in 1915, and 1,094,659 in 1914, with the 1916 value £463,018 against £279,190 in 1915, and £303,580 in 1914. The figures for millboard for the four months were 342,186 cwts. against 288,969 cwts. in 1915, and 431,180 cwts. in 1914, with values of £225,356, £149,492 and £218,360.

Reduced Size of Newspapers.

The shortage of pulp has been reflected to a marked degree in the newspapers of the country. In many cases proprietors found that it was impossible to run the papers at a profit due to the higher costs, and throughout the country many newspaper offices have been closed altogether. Those which are still continuing business are very much reduced in size and it is understood that even greater curtailment is contemplated.

Canadian Prospects.

As has already been stated Britain in the past has been almost entirely dependent on the Scandinavian countries for her pulp and paper, but when the war is over there is no reason why Canada should not capture a considerable part of the trade. The Dominion has all the material essential for the development of the industry on an extensive scale and the only obstacle that can stand in the way is the greater cost of freight. But when peace is restored the business methods of the past will be revolutionized, and there is every prospect of this industry becoming an extensive part in the Canadian trade with Britain.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

Market conditions in all lines of paper continue brisk and the trade is generally of the opinion that the present activity will continue until the end of the present year at any rate, ensuring an unusually energetic summer season. Whether prices have reached their top notch it is impossible to tell, but there have been no advances during the past three weeks except on coated stock which jumped another half a cent. Kraft may take another elevation and also wrappings, but whether books and writings and news-print will go higher cannot be foretold.

There are as many differences of views with respect to the quotation end of the game as there are divergent guesses regarding when the war will end. No one seems to know exactly what will happen. In the meantime the mills are working to capacity in all lines and doing their best to meet orders. There is one certain phrase of the situation, and that is a conviction of the assured future of news-print generally, for no less than three Canadian plants are having new machines built which will increase daily production over two hundred tons. Prices in news-print continue very stiff and there is not a plant but what is rushed to the limit for many months to come. Old contracts are being faithfully lived up to, but what new business is taken aboard—well, price is an arrangement according to quantity required, distance of shipment, when needed, etc. There are no reserve of news stock.

Sulphite pulp continues to ascend in price, and is now being sold at eighty-five dollars at the mill for easy bleaching. The outlook for relief from Scandinavia is not hopeful, and the future in regard to prices and deliveries is decidedly uncertain. All contracts are being honored, however, and no reputable mills have attempted to take advantage of the situation which has arisen or sought to evade responsibility. This is a tribute to the honesty and straightforward business policy of the producers.

One large mill which produces linens and bond papers sums up the situation by saying it has been brought to their attention by some of the paper jobbing houses that the prices of paper have reached the top and will soon show a decline. "So far as we can judge we do not anticipate such a condition. It is true there has been some shading of certain lines of rag stock, but it would seem that what little reduction has been made, is only the natural reaction from the extremely rapid advance made not long since. Reliable stock houses announce that the top price has not been reached, but that further advances are sure to come, possibly hot in the near future, but later on in the year."

Stocks of jobbers have been largely depleted and are still much below normal. Nearly all the countries formerly supplied with paper from Europe are looking to Canada and the United States for such a supply as they cannot obtain the goods from former sources.

Something of what this means is shown in the numerous requests for samples, and quotations. What has been done in this line is only a slight forecast of what can readily be seen as likely to result from conditions abroad. The embargoes on foreign stock, the great uncertainty and scarcity of the supply of pulp, with prices considerably more than one hundred per cent above normal, on both bleached and unbleached, and, the prospect of such conditions continuing for a long time ahead, the outlook is not promising for lower prices. Without assuming the role of a prophet many mills do not look for such reduction, at least not this year.

It is interesting to note that Canadian plants have not exported any paper in the book or writing line although they could obtain much higher figure abroad. They have always looked carefully after the home market and given domestic demand their sole consideration, even when a few months ago mills were running only five days a week. Now they are up against not only the raw stock proposition, but also labor difficulty as well and find it exceedingly trying to secure enough men. Many mills are stating plainly in all correspondence that, owing to the uncertain conditions relative to the supply of raw material, all quotations are for immediate acceptance only, and all prices are subject to change without notice, while all orders entered are subject to the ability of the mill to obtain sufficient material to fill the same. Owing to the situation that has arisen in regard to colors, labor and stock some plants have discontinued certain lines and have notified the trade to that effect.

Business with paper jobbers keeps up well and every month this year has shown a material increase in turnover from last year. Mills and paper houses cannot supply certain lines and there are not a few cases where printing plants have had to shut down on large jobs for weeks owing to their inability to get the proper stock while contracts have had to be refused by some printing establishments. "Can't get the paper," is the cause.

The demand for ground wood is likely to become more active than ever and prices will ascend owing to the scarcity of labor, so many bushmen joining the forestry battalions. Again, due to the shortage in sulphite which seems bound to continue, efforts are being made to substitute ground wood for sulphite wherever possible. Water conditions continue satisfactory and, if the present rains continue there is more danger from flooding. Some streams are the highest known in years. All grinders in ground wood mills are running to capacity and plants which have been idle are being put in commission.

In the rag and paper stock arena there is considerable doubt of what is coming next, and, as one dealer expresses it, "things are hanging in the air." Shavings are a little stronger. There is an increase of a few cents in mixed papers. Thirds and blues are down

while roofing stock remains about the same. There is an ample supply of all kinds of material owing to the campaign of conservation recently fostered among the people and business houses.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls), \$2.40 up, at mill, in carload lots.
 News (sheets), \$2.75 up, at mill, in carload lots.
 Book papers (carload), No. 3, 5.50c.
 Book papers (ton lots), No. 3, 5.50c to 6.25c.
 Book papers (carload), No. 2, 6.50c to 7.00c.
 Book papers (ton lots), No. 2, 6.75c to 7.25c.
 Book papers (carload), No. 1, 7.00c to 7.50c.
 Book papers (ton lots), No. 1, 7.25c to 7.75c.
 Sulphite bonds, 8c to 9½c.
 Writings, 7c up.
 Grey Browns, \$3.25 to \$4.50.
 Fibre, \$5.00 to \$6.00.
 Manila No. 1, \$5.00 to \$6.00.
 Manila No. 2, \$4.25 to \$4.75.
 Manila, B., \$4.00 to \$4.50.
 Unglazed Kraft, \$7.50 to \$9.00.
 Glazed Kraft, \$8.00 to \$9.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, unbleached, 75c to 1.00c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.
 Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 50c.
 Paper bags, kraft, 35 discount.
 Confectionery bags, 25 discount.

Pulp.

Ground wood, \$22 to \$26.
 Ground woodpulp (at mill) \$18 to \$20.
 Easy Bleaching Sulphite, \$85.
 Sulphite, news grade, \$75.
 Sulphite (bleached), delivered, \$1.40 up.
 Sulphate, delivered, \$90 up.

Paper Stock.

No. 1 hard shavings, \$3.50.
 No. 1 soft white shavings, \$3.00.
 No. 1 mixed shavings, 65c.
 White blanks, \$1.10.
 Heavy ledger stock, \$2.25.
 No. 2 book stock, \$1.00.
 No. 1 book stock, \$1.50.
 No. 1 Manila envelope cuttings, \$1.60.
 No. 1 print Manilas, 80c.
 Folded news, 65c.
 Over issues, 65c.
 No. 1 clean mixed paper, 52½c.
 Old white cotton, \$4.25.
 Thirds and blues, \$2.50.
 No. 1 white short cuttings, \$7.00.
 Black overall cuttings, \$2.50.
 New light flannelettes, \$5.00.
 Ordinary satinets, \$1.75.
 Flock, \$2.00.
 Tailor Rags, \$1.65.

NEW YORK MARKETS.

Ground wood pulp has shown a steady inclination to rise and has advanced considerably in price. At the present time, the grinders are asking from \$21 to \$22.50 for their stock. The consumption continues so strong and so continuous that there is serious fear

that there may be somewhat of a shortage in ground wood during the coming summer. That this fear will materialize if the season proves to be a dry one, is not doubted. Even if the weather conditions are favorable, it is believed that the steady drain on the supplies of pulp will eventually force the quotations up to a prohibitive level, such as has never before been heard or even believed possible. Just now, it is understood that a number of the grinders have sold their product ahead for the current year. However, there are still considerable spot shipments to be had at good prices. Reports from the news mills and the other consumers of ground wood show that they are all continuing at full capacity and using just as much pulp as it is possible for them to use. The grinders are all working at their maximum capacity, but have very little stock stored.

The outlook in the market for chemical pulp has become more pronouncedly firm within the past few weeks than it has been in some time. Importations from Sweden have been small in quantity and of practically no consequence for the consumers. In fact, the expectations of the mills to see large quantities of sulphite shipped to the United States soon after the Baltic Sea became navigable have been sorely disappointed. As was predicted in these columns some time ago, the amount of shipping has not increased. It may even be possible to say that they have decreased to a considerable extent. Offers have been made for shipment, but they are considered too high. However, the Scandinavians are making no effort to "come down" in their prices, but, on the contrary, are holding firm. In the first place, they contend that the cost of manufacture continues high and that, at times, it becomes necessary to discontinue operation because of inability to get certain raw materials. Aside from this, it is stated that there is no real need of bartering with the Americans so long as they hesitate to pay the enormously high prices which are now being asked. According to advices received from abroad, the Scandinavians are able to dispose of whatever output they have, on the European continent at fabulous prices. Importers claim to have received quotations for bleached sulphite from abroad which were as high as 15c ex-dock New York. This price is, of course, ridiculous. Quotations are heard of 8c to 9c for spot lots in New York City. This figure, however, is merely nominal for it is doubtful whether any foreign bleached sulphite can be obtained at this price to-day. Domestic bleached is quoted at 6c to 6½c. There is also very little of this which can be obtained to-day at any price. Unbleached sulphite continues very firm with quotations on foreign stock which is available, at about 4c to 4¼c. Domestic unbleached can be had in fairly large quantities at about 3¾c, f.o.b. pulp mill. Easy bleaching is rather scarce and can not be obtained for less than 4½c to 5c. Conditions in kraft pulps have been constantly growing worse. There have been very little imports, while the domestic manufacturers' have very little to offer, either because they have sold their production far ahead, or because they themselves are consuming much more than their usual quota. Quotations are at about 4½c to 5c. Domestic bleached soda pulp is very firm at about 4¼c to 5c.

The tendency in the rag market is to continue to strengthen and gradually to advance. Up to this time, the mills have shown a decided disposition to pay no

interest in what was going on and to make no effort to buy stock. However, there has been a fair movement of rags and dealers have been able to keep their prices fairly firm. It is known that a few firms have been carrying on a quiet movement to buy up whatever stock was available and are putting all of this stock into store with the expectation of a rising market in the near future. Already reports are common of a number of concerns which have thus far put into warehouses thousands of tons of rags. In fact, it is recognized that the course of the market is within the control of a few men, providing they are financially strong enough to "hold out." Efforts are still being made to get rags out of England, but they continue to be futile. New cuttings have shown a tendency to become more active within the past week and are now fairly firm at about 9½c to 11c for the No. 1 white. Old whites have also shown more activity and are reported selling at as high as 6c. Thirds and blues have taken on considerable strength and are selling much better than before. Prices range from 4¼c to 4½c. Black stockings can be had for 4c to 4¼c. Roofing stock has been moving better and consumers have paid as high as 2¼c for the good No. 1 stock.

Despite the embargo on bagging issued by England, there has been no attempt on the part of either bagging or rope to strengthen. Instead, there has been considerable weakening noted within the past few days. Gunny is reported as low as 3½c. Bright bagging is quoted as low as four cents. It is understood that England is not granting many export licenses for bagging and rope. Waste papers are fairly firm, although the mills are not yet doing much in the way of buying. Thus far, the Western mills continue to remain out of the market, insisting that they can buy for less money outside of New York City. Hard white shavings are quoted at about 3.90c to 4.10c; soft white shavings at 3½c to 3¾c; straight magazine at 2c; ledger stock at 2.10c; krafts at 2¾c; strictly over-issue news, 90c; mixed papers at 60@65c.

While the buying in the paper market has eased somewhat, the condition of things seems to be growing firmer. The mills are all crowded with orders. In fact, it is now known that most of the mills will be able to continue operation at their maximum capacity through the summer and some of them far into September, even if they do not receive a single order in the meantime. Contrary to all traditions up to this time, the demand for news-print continues to be very strong and the mills are being called upon to ship their product as fast as they can turn it out. Reports are to the effect that advertising has increased heavily and permanently with all of the newspapers of the country, which means that the strong demand for news-print will continue right through the summer. There are no prices for none of the mills are able to take business. However, rumors are heard of 4c for odd lots which can be obtained. Book papers are very firm. It is doubtful whether it is possible to-day to find a single concern which can take an order for super-calendar for delivery in less than three months. Some of the book mills are filled ahead through November. It is understood that a few mills are trying to break the market in coated paper. But there are reports that these mills are not making deliveries. Present indications that supercalendar will go up to 10c by the fall. Tissue paper is also very firm. No. 1 white still remains unobtainable even at prices as high as

\$1. For manila tissue, the market is considered to be about 85c. Further advances were last week recorded in wood manilas and fibres. No. 1 manila is quoted at 5c to 5¼c, while a No. 1 fibre is held for 4¾c.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$21 to \$22.50 at pulp mill.
Ground Wood, No. 2, \$19 at pulp mill.
Unbleached Sulphite, dom., 3.75c at pulp mill.
Easy bleaching, impt., 4½c to 5c.
Unbleached foreign, 4c to 4.25c, ex-dock, N.Y.
Kraft, 4.50c to 5.00c, ex-dock, N.Y.
Bleached, domestic, 6.25c, at pulp mill.
Bleached, foreign, 8c to 13c, ex-dock, N.Y.

Paper.

News (rolls), \$4.00 up, at mill, in carload lots.
News (sheets), \$4.25 up, at mill, in carload lots.
Book papers (carload), No. 3, 6c.
Book papers (ton lots), No. 3, 6¾c.
Book papers (carload), No. 2, 7c.
Book papers (ton lots), No. 2, 7¼c up.
Book papers (carload), No. 1, 7¾c up.
Book papers (ton lots), No. 1, 8c up.
Sulphite bonds, 8c up.
Writings, 7c up.
Grey Browns, \$2.85 to \$3.50.
Fibre, \$4.50 to \$5.50.
Manila No. 1, 5c up.
Manila, No. 2, 4c up.
Manila, B., \$3.35 to \$4.00.
Unglazed Kraft, \$7.50 to \$10.00.
Glazed Kraft, \$9.00 to \$12.00.
Tissues, bleached, 90c to 1.50c.
Tissues, unbleached, 80c to 1.00c.
Tissues, unbleached, 65c to 1.00c.
Natural greaseproof, 10c to 14c.
Bleached greaseproof, 15c to 20c.
Drug papers, whites and tints, 7c to 9c.
Paper bags, Manila, 50, 10 discount.
Paper bags, kraft, 40 discount.
Confectionery bags, 33 1-3 discount.

FOAM EFFECTS CAUSED BY MECHANICAL PULP.

In common with other paper-makers, says a writer in a Continental pulp paper, I have repeatedly noticed that at the time of nature's awakening, with the first greening of the forests, there occurs in paper made from mechanical wood pulp a notable foaming of the pulp as it flows on to the paper machine.

How this phenomenon is to be explained I have not as yet been able to determine. Inasmuch as the coniferous woods, when cut in the spring, prove particularly liable to foam when reduced to pulp, the time of cutting may be a determinative factor. It may be mentioned casually in this connection that this kind of pulp is exceedingly rich in rosin, and together with the disadvantage of foaming there is the advantage that its use materially facilitates sizing and effects a saving in rosin. The manufacture of qualities containing a large proportion of mechanical pulp, in which the foaming may be attended with undesirable consequences, should therefore only be undertaken conditionally.

New Publications

Cost Accounting by J. L. Nicholson.

Cost Accounting, Theory and Practice, is the title of a recent work by J. Lee Nicholson, C.P.A., which is published as one of the Ronald Accounting Series. The author may well be considered an authority on this most important branch of accountancy, having for many years practised his profession in New York as the head of the company which bears his name, and also as instructor in cost accounting at Columbia University. In the preface the author sets forth his purpose in writing the volume as a desire to provide public and cost accountants with a clear reference book on practical cost accounting, and to present its theory free from needless and confusing dissertations. Mr. Nicholson has prepared the book with a careful eye to arrangement, and it is divided into distinct divisions and subdivisions which add greatly to the lucidity of the whole. He devotes considerable space to a careful exposition of wage, cost, departmental, special order, product and other systems, as well as to explaining the principles of the various kinds of time reports and payroll forms. Four charts, carefully prepared by Mr. John F. D. Rohrbach, C.P.A., aid the author in explaining the complicated principles of the special order and product systems. A number of forms, appearing at the conclusion of the volume illustrate the text. The entire work covers some 340 pages. The printing is admirable, and the appearance of the book is most attractive. The volume is published by the Ronald Press Co., 20 Vesey St., New York, and will be delivered by them postpaid on the receipt of \$4.00.

* * *

Self-Propelling Waggon and Truck Loaders.

The Jeffrey Manufacturing Company, of Columbus, Ohio, manufacturers of Elevating, Conveying, Crushing, Screening and Power Transmission Machinery, have just received from the press their latest Bulletin No. 177, featuring their Self-Propelling Wagon and Truck Loaders for handling Crushed Stone, Sand, Gravel, Clinker, Coke, etc.

These machines have a capacity of 1 to 1½ cubic yards of material per minute, will load crushed stone maximum size pieces through 3½in. ring, and will load trucks or wagons in 3 or 4 minutes, saving the wages of from 2 to 5 shovelers.

The Self-Propelling Device enable one man to operate the loaders as it is fed into the pile, and move the machine about under its own power.

These loaders are driven by 5 H.P.I. Motor or 6 H.P.

gasoline engine. The type "A-15" Loader is built with a collapsible elevator, which makes it available about all parts of the yard and easier to operate over rough ground; also permits it to be used where low sheds, trestles and other overhead obstructions are encountered.

The bulletin contains illustrations of many interesting installations, specifications, prices and complete details of their different types of loaders. A free copy can be obtained by anyone interested by writing to the office of the Jeffrey Manufacturing Company, Power Building, Montreal.

AMERICAN CLAY IN PAPER MAKING.

Several interesting facts regarding the possibility of using American clays in the manufacture of paper were brought out at a recent conference between representatives of clay-mining companies and of the United States Bureau of Standards, which had been arranged for the purpose of discussing the status of imported and domestic clays in this industry. It was shown that several mills in the United States were using American clays with excellent results, while several others making the same grade of paper had never been able to use anything except imported clays.

The facts indicate that part at least of the criticism of domestic clays is due to prejudice in favor of the imported article. Foreign clays are said to have a much whiter appearance than the domestic, yet it is definitely known that many imported clays are treated with ultramarine blue, giving them an artificial effect.

Representatives of the clay companies offered to supply all the American clays that would be needed by the Bureau of Standards in its investigation, and also offered the assistance of any of their representatives and their fullest co-operation in general. Several lots of the products of their largest mines are to be sent to the bureau. Samples of the best English products will be obtained for comparison.

It is proposed to make runs on the paper machine to determine the difference in rate and amount of settling-out of the clays, and to make tests for color, per cent of grit, ease with which the clays mix with water, and other experiments which will be devised to determine such characteristics as have a bearing on the problem.

At the same time that this meeting was held, there was a conference with a large manufacturer of graphite crucibles, which was confined to the discussion of bonding clays used in this industry.

BEVERIDGE'S SULPHATE PULP SYSTEM

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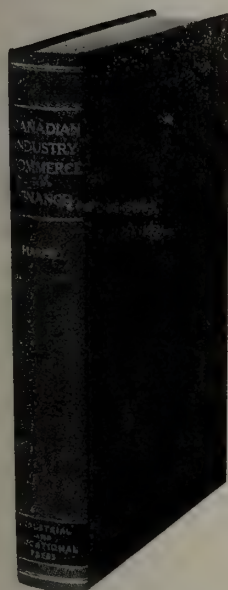
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JAMES BEVERIDGE, Chatham, New Brunswick.

EXISTING PLANTS ALTERED AND IMPROVED

CANADIAN INDUSTRY, COMMERCE AND FINANCE



By

J. J. HARPELL

It is essential that every business man in Canada, or elsewhere, who is interested in the Industrial, Commercial and Financial Development of the Dominion should know Canada thoroughly.

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I. Industry:—

Production and Consumption — Fur Hunting and Trapping — Mining — Fisheries — Lumbering — Agriculture: Orchards and Gardens, Field Crops, Animal Products — Manufacturing.

II. Commerce:—

Development — Foreign Commerce — Domestic Trade — Ocean Transportation — Ocean Ports — Inland Water Transportation — Railroads — The Common Road or Highway — Methods of Despatch — Markets — Weights and Measures.

III. Finance:—

Development — Banking — Coinage — Credit — Instruments of Credit — Government Notes — Bank Notes — Cheques — Money Orders, Postal Notes, and Telegraph Transfers — Drafts — Letters of Credit — Documentary Bills of Exchange — Foreign Exchange — Quotations in the London Market — Bills of Lading — Ware-

house Receipts and Dock Warrants — Promissory Notes — Mortgages and Liens — Deeds — Stocks — Bonds and Debentures — Stock Exchanges — Insurance — Marine Insurance — Fire Insurance — Life Insurance — Annuities — Accident and Sickness Insurance — Employers' Liability and Workmen's Compensation — Fidelity Guarantee Insurance — Boiler, Burglary, Plate Glass, Live Stock, Hail, Weather and Tornado, and Title Insurance.

IV. Marketable Commodities and Canadian Producers.

V. Foreign Manufacturers of Special Machinery and Supplies Necessary to Canadian Industry, Importers, Manufacturers' Agents, and Wholesale Houses, Wholesale Dealers and Exporters.

Foreign Manufacturers of Special Machinery and Supplies Necessary to Canadian Industry, Textile Machinery and Supplies, Pulp and Paper Makers Machinery and Supplies, Mining Machinery and Supplies, Printers Machinery and Sup-

plies, Fishermen's Supplies — Importers and Manufacturers' Agents — Wholesale Houses: Dry Goods, Men's Wear, Woolens, Linings and Trimmings, Hats and Caps, Millinery, Boots and Shoes, Leather, Groceries, Glass and China, Sporting Goods, Hardware, Flour and Feed — Wholesale Dealers and Exporters: Apples, Bacon and Hams, Bran and Shorts, Butter, Cattle, Cheese, Eggs, Fish, Fruit, Furs (raw), Hay, Hides, Hogs, Honey, Horses, Lard, Maple Syrup and Sugar, Milk (Condensed, Evaporated, and Powdered), Oils (Fish), Pork, Potatoes, Poultry, Produce (General), Pulpwood, Seeds, Wool.

VI. Institutions Necessary to the Business Interests of the Country:—

Banks — Trust Companies — Stock and Bond Brokers — Life Insurance Companies — Fire Insurance Companies — Accident and Casualty Insurance Companies — Consulting Engineers — Consulting Chemists and Analysts — Leading Canadian Technical and Specialized Periodicals.

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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Sadler & Hawarth, Montreal.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Bollers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Bollers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada

Diffusers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digester Lining:

Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Drainer Bottoms:

Snell, Samuel, Co., Holyoke, Mass.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Ont.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada.
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

Crookes, Roberts & Co., Sheffield, Eng
 Diston, H. & Sons, Ltd., Toronto, Ont.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotives:

Montreal Locomotive Works, Ltd., Montreal.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada
 Carthage Machine Co., Carthage, N.Y.
 Downingtown Mfg. Co., East Downingtown, Pa.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Norwood Engineering Co., Cowansville, P.Q.
 Progress Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Valley Iron Works, Appleton, Wis.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Fox, Stockell & Co., London, England.
 Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Storage Tanks:

MILL SUPPLIES---Continued

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jones & Glasco, Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glass, Co., Montreal, P. Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurtemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M., New York, N.Y.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Tippet, Arthur F. & Co., Montreal, Canada.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

The Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R. Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City.

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.

Lincoln Paper Mills Co., Ltd., Merrittton, Ont.

Ford, J. & Co., Port Neuf.

Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.

Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.

Eddy Co., The E. B., Ltd., Hull, Que.

Kinleith Paper Co., Ltd., St. Catharines, Ont.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

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Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

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Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
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Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

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Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

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Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
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Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

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Minister of Lands, Forests and Mines

Toronto

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Teese & Persse, of Alberta, Limited.

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Tees & Persse.
John Martin Paper Co., Ltd.

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Teese & Persse, of Alberta, Limited.

VANCOUVER, B.C.:

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Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

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Tees & Persse.

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Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
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NEW GLASGOW, N.S.:

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Powis, A., 64 King E.

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Continental Bag & Paper Co.
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Eddy, E. B. Co.

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Brown Bros., Ltd., 51 Wellington Street W.
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Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

MONTREAL, QUE.:

Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill.
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.

QUEBEC, QUE.:

Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

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Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., England.
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York.
Scandinavian American Trading Co., New York, N.Y.

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WANTED—A position as Woods Manager or purchasing agent for a pulp and paper company. Fourteen years experience. Technical education as civil engineer. Best of references. Employed but desires opportunity for advancement. Apply Box 117, Pulp and Paper Magazine, 45 St. Alexander St., Montreal.

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A	
Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	

B	
Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge, Jas., Chatham, N. B.....	48
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6

C	
Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	6
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	6
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	62
Churchill & Sim.....	
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D	
Darling Bros, Ltd.....	
DeCew, J. A.....	64
Dean & Son.....	
Disston, H. & Sons, Ltd.....	60
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	61

E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F	
Farrel Foundry & Machine Co.....	1
Ferguson, H. S.....	64
J. Ford & Company.....	

G	
Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	
Glens Falls Machine Works.....	

Groot, H. de.....	41
H	
Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	66
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg. Co.....	14
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6

K	
Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7

L	
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	60

M	
Mackinnon, Holmes & Co.....	6
Marx, J. & Co.....	65
Meinke, G. A. & Co.....	68
Montreal Locomotive Works, Ltd.,	63
Moore & White Co.....	15

N	
Northern Crane Works, Ltd.....	6
Norwood Engineering Co. of Can. Ltd	13

O	
Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P	
Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	65

R	
Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66

S	
Sadler and Haworth.....	50
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	62
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Snell, Samuel Co.....	
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T	
Taylor, J. A.....	62
Ticonderoga Machine Works.....	6
Tippet, Arthur P. & Co.....	13

U	
Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd....	7
Voith, J. M.....	12

W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd....	8
Westbye, P. P.....	
Wilson-Paterson Co.....	



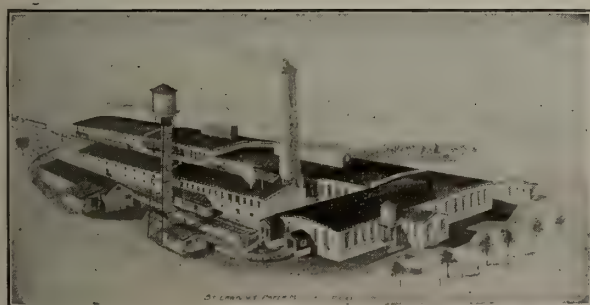
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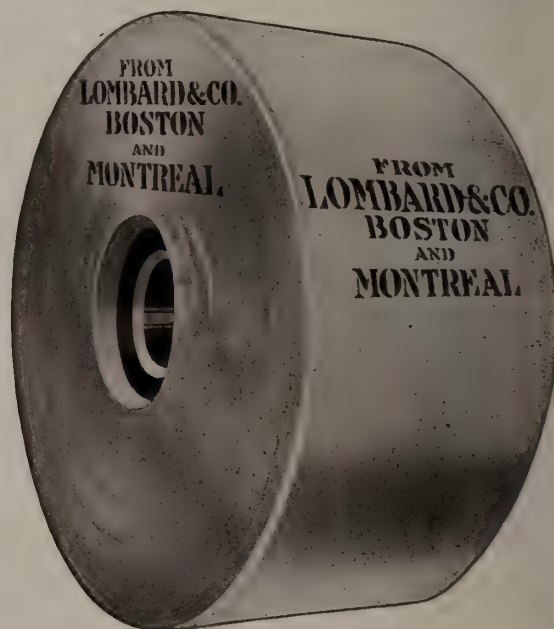
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You can obtain some idea of how we have grown, not only as tire makers, but as manufacturers of Hose, Belting, Packing, etc., by reading this statement:—

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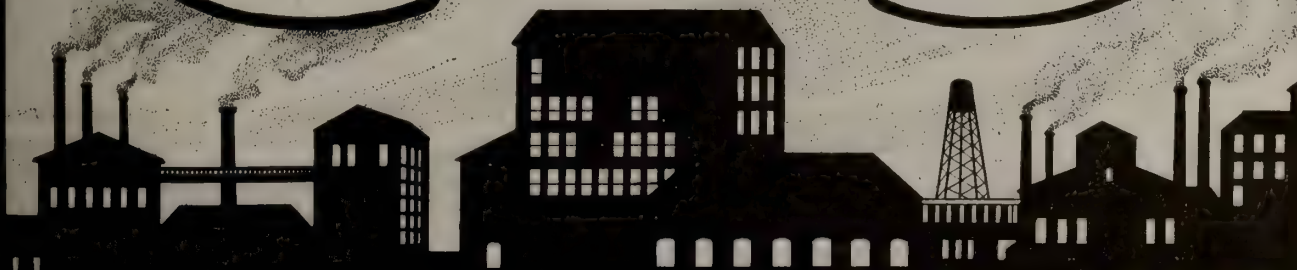
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*Branches in the
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We carry a large stock of blanks of the various sizes in both metals and can fill all orders promptly.

Old plates reclosed and recut by our process are practically as good as new and give better results than by any other process.

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OFFICES: Lennoxville, Que.

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With special seams and edges. Noted for long life, smooth running, fine finish.

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Build the PAPER MACHINERY that reduces the COST, increases PRODUCTION and produces PAPER or BOARD of SUPERIOR quality. — Inquire and let us tell you why.



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Spent Liquors give the Maximum Economy and Efficiency

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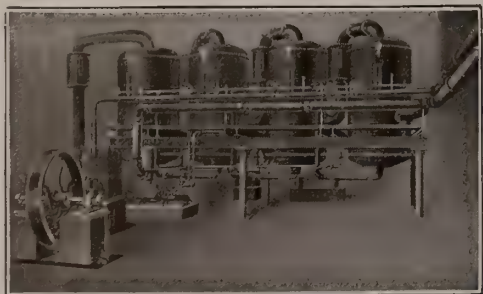
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Complete installations made by "The Firm With The Experience"

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and G.P.O. BOX 2803, MONTREAL



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A locomotive to justify its cost must start the required load and keep it going.

The right amount of the right material must be provided in the right place.

Each and every part must be sure to fit not only the locomotive for which it was made, but every other locomotive of the same size and design. Spare parts must be instantly available, made so well as to go into place without a machine shop.

We have a number of standard sizes of locomotives in stock and can make immediate delivery.

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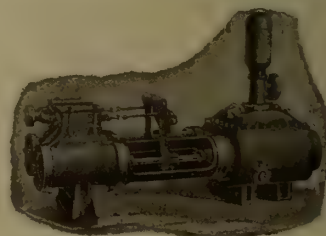
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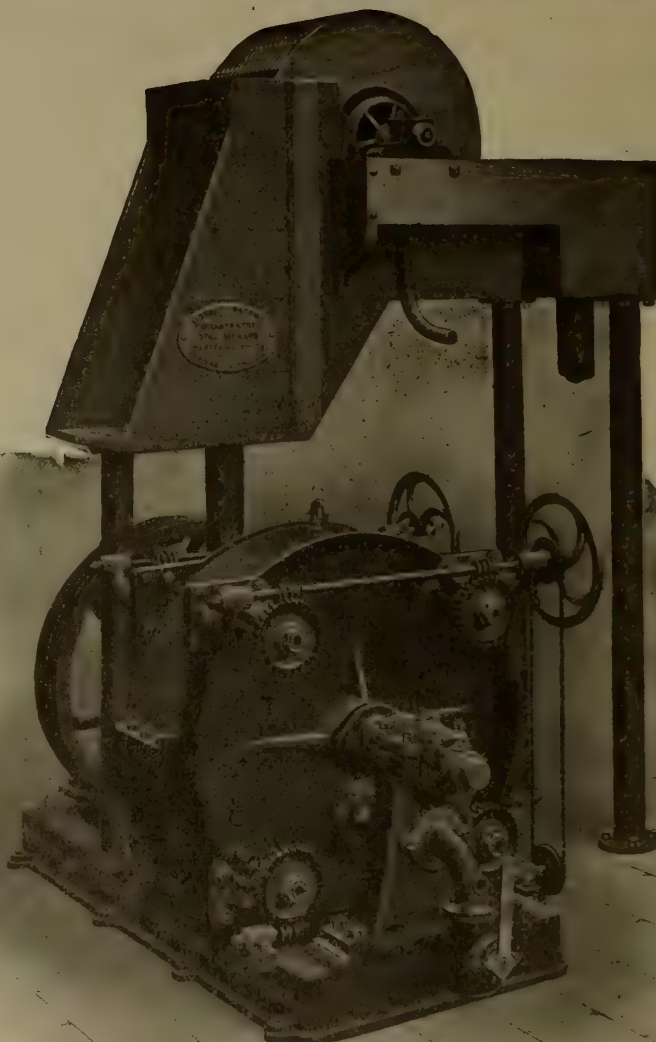
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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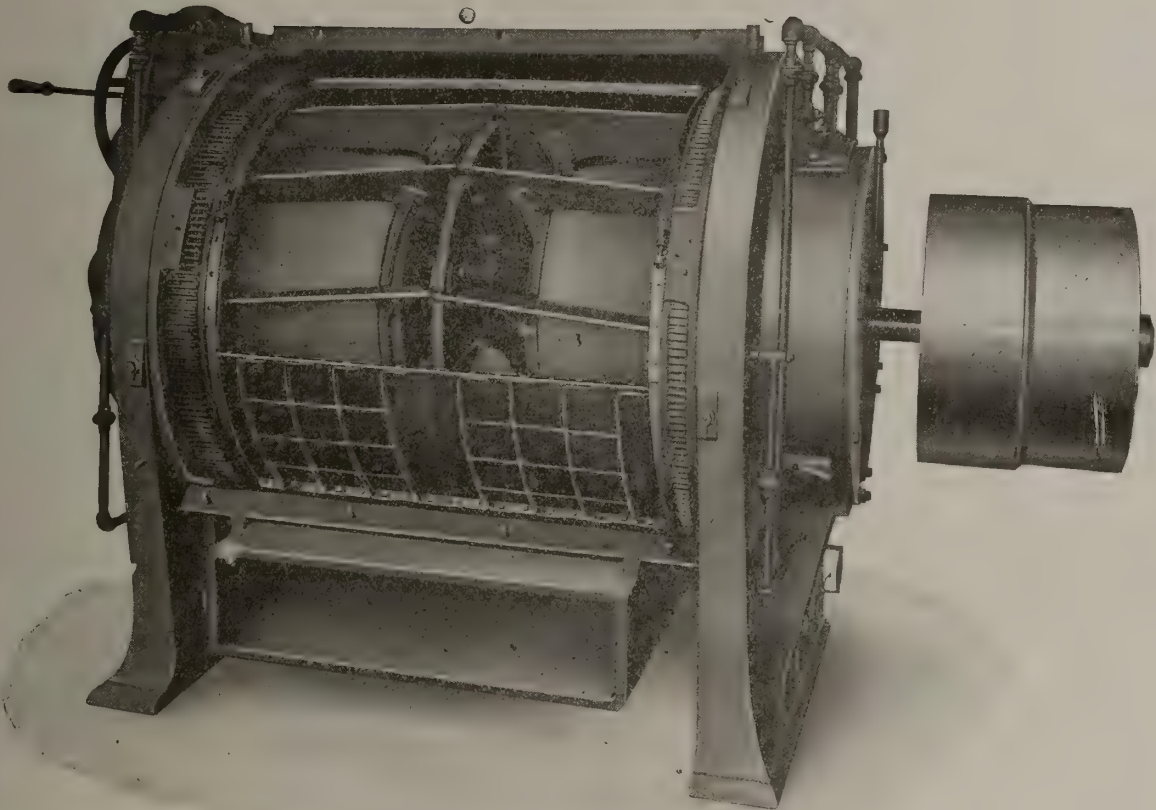
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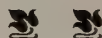
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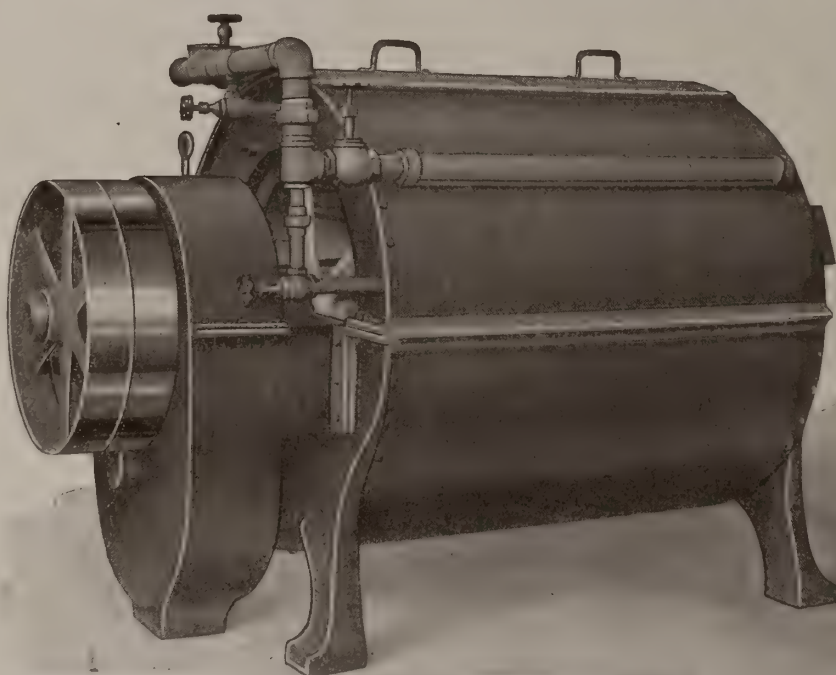
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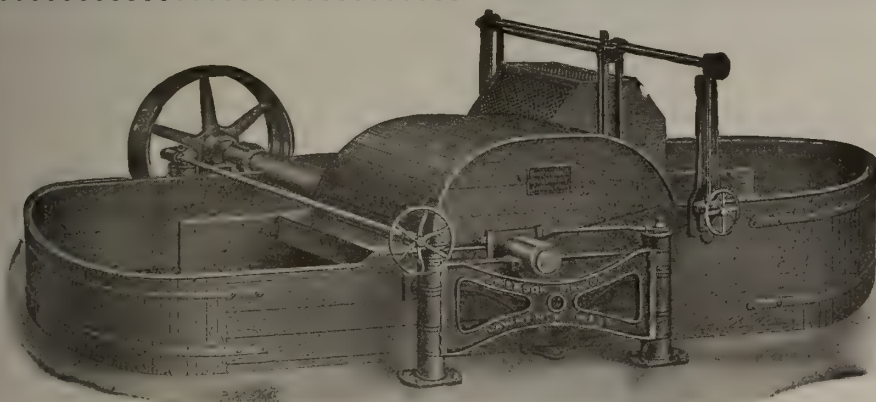
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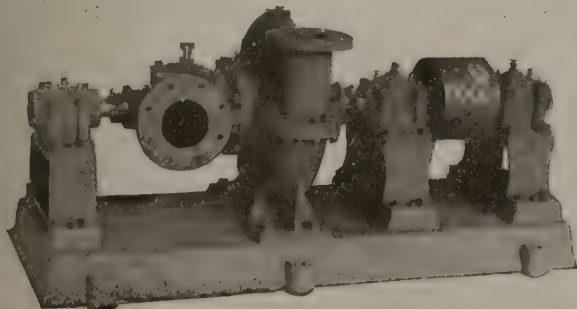
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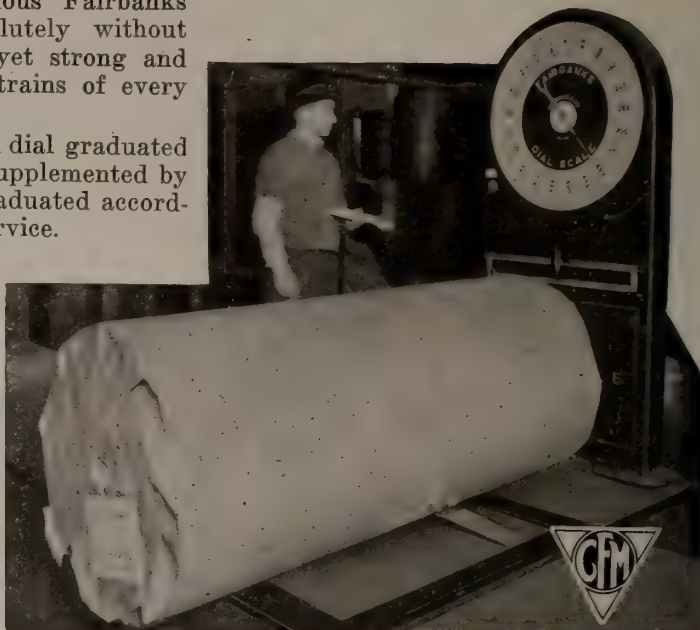
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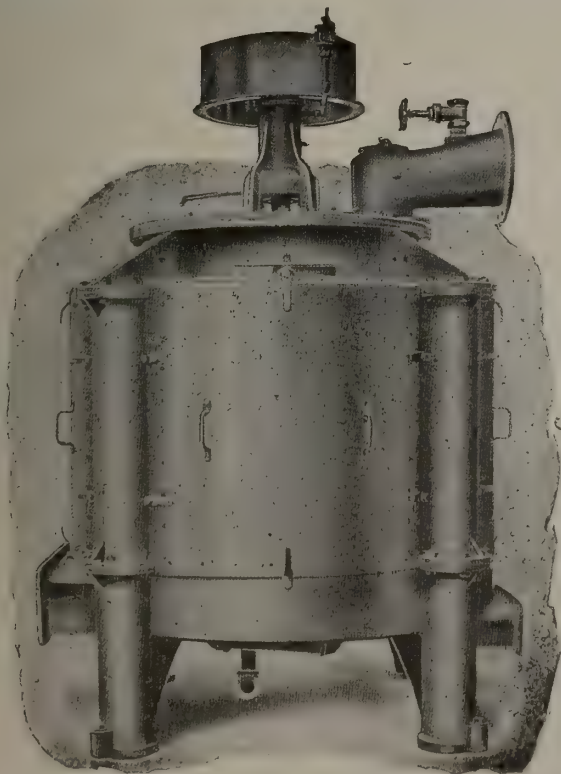
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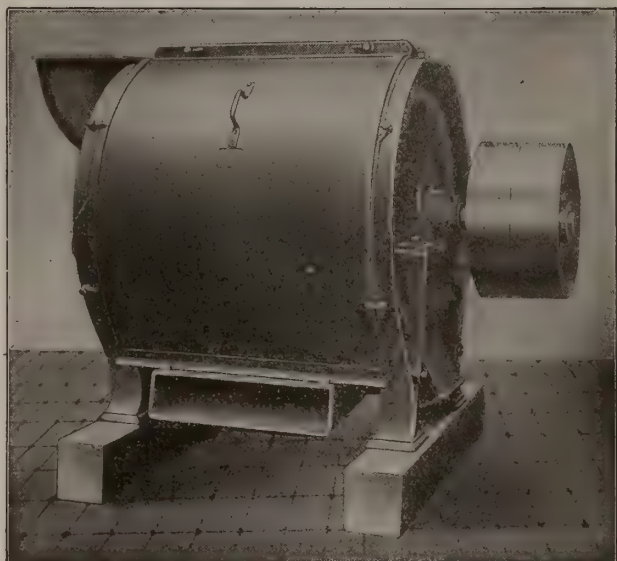


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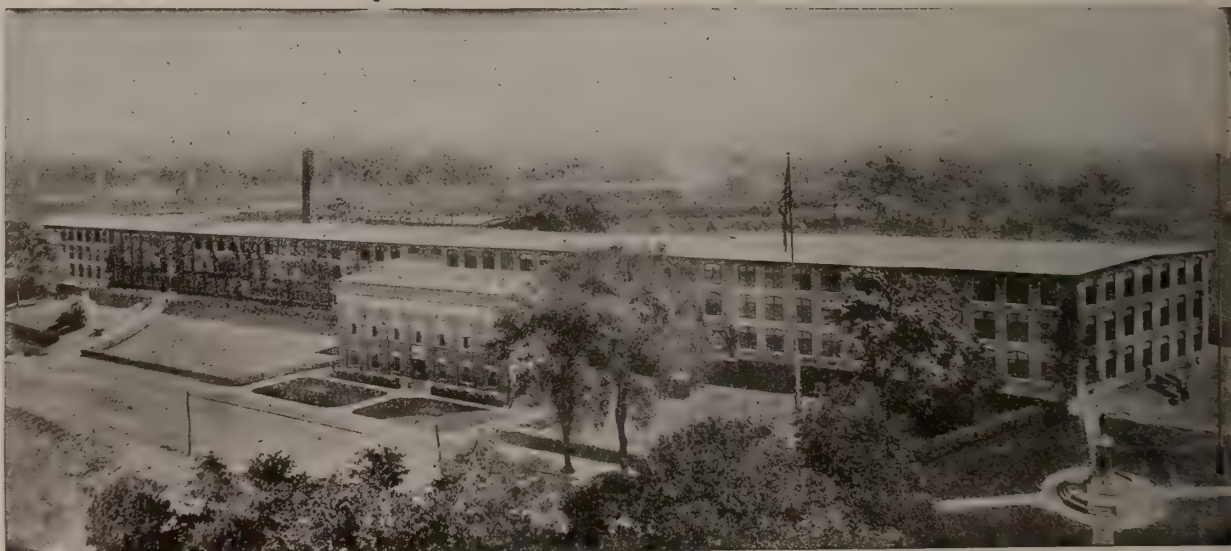
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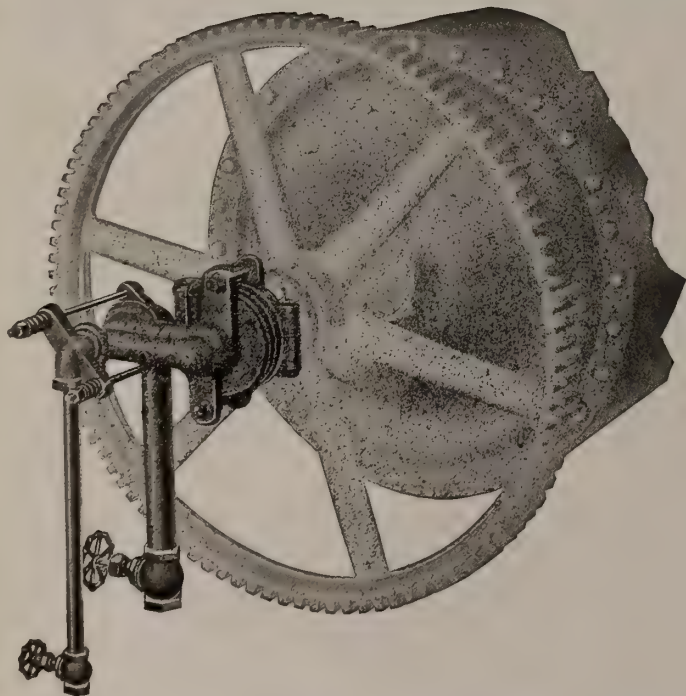
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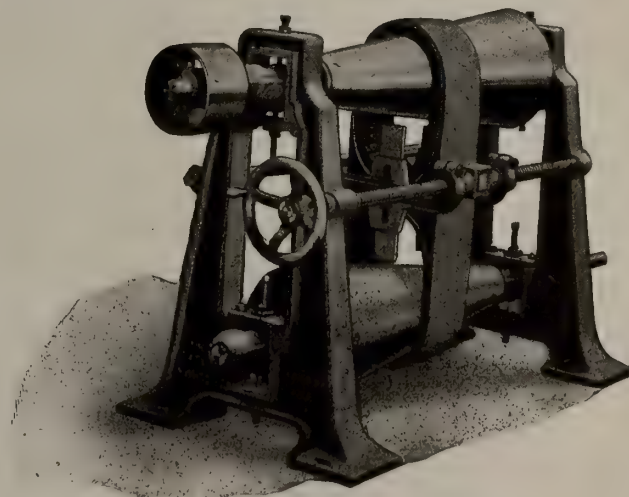
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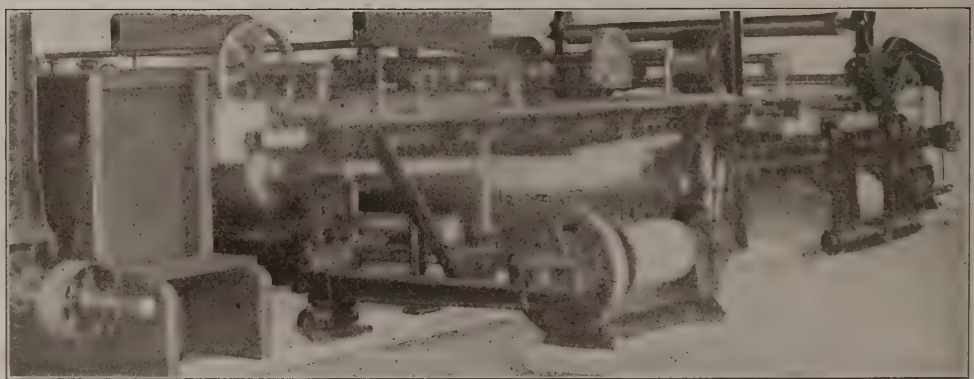
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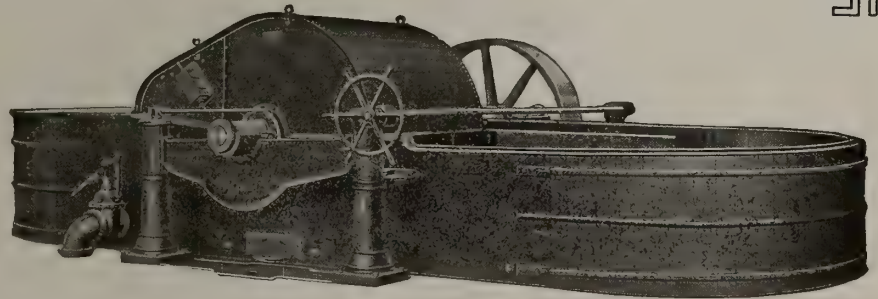
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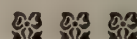
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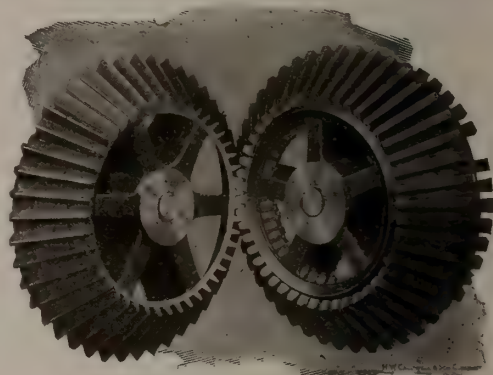
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*Official Journal of the Technical Section of
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MONTREAL, JULY 1, 1916

No. 13

PAPER MAKERS' PROBLEMS.

Manufacturers of news-print paper are busier than at any time in their history, but in a measure are between the devil and the deep sea. The demand for the output of their mills is steadily increasing and to-day practically every mill on the continent is working to capacity. To offset this demand the manufacturers are face to face with mounting costs of the commodities which enter into the manufacture of paper. The prices of sulphite pulp, of ground wood pulp and everything else which enters into the manufacture of paper is showing marked advance over the prices prevailing a few months ago.

In addition to these adverse features, Canadian paper manufacturers are face to face with new problems. It is now reported that the United States Government will collect an income tax from Canadian mills on the business they have been doing in the United States. If this proves true, and there are many reasons to believe that it will, Canadian manufacturers will have an additional and heavy burden placed upon them. Already they have to pay our own heavy war tax which makes their competition with American mills all the more difficult.

Another problem has also arisen, but so far has not taken tangible form. This is to the effect that the Canadian government will impose an export tax on news-print paper and ground wood pulp. If this were accomplished, further complications will arise in connection with our export trade, especially that transacted with the United States. Just what will

be the final outcome of the continued demand for all kinds of paper combined with the advancing prices of the commodities entering into its manufacture and the proposed legislation both on this side and on the other side of the line remains to be seen. It is sufficient to say that for the present, paper manufacturers are considerably worried.

PAPER MEN BEREAVED.

The Pulp and Paper Magazine extends its sincerest sympathy to Mr. J. N. Greenshields, K.C., and Mr. C. R. Whitehead, President and Vice-President respectively, of the Wayagamack Pulp and Paper Company, in the loss of their sons at the front. The two young men in question have made the Supreme Sacrifice, giving their lives in defence of civilization.

Mars is insatiable in its demand for men and the tragic part of it all is that the cry is "Send us the best ye breed." The only consolation these fathers and hundreds of others have is that their sons, so dear to them, have given up all that men hold dear in a fight in defense of the principles of humanity and civilization.

The pulp and paper interests of Canada have sent hundreds of men to the front, as is evidenced by the lengthy Honor Roll frequently published in this magazine. The heavy toll being exacted brings home to all of us, with convincing force, the terrible nature of the struggle that is being waged on the battle fields of France and Flanders.

THE DESTROYED FORESTS OF EUROPE.

Reports from the battle fields of Europe all go to show that the forests of France, Flanders and Russia have been devastated by the warring nations. Pictures taken of the fighting in Northern France and in Belgium show that what were once fine forests are now but shattered stumps and that it will take at least a hundred years to restore the forests to their pre-war condition. Not only have the actual forests in the zone of fire been devastated, but thousands of other acres of forest lands have been cut down for the purpose of building trenches, making roads and for other military requirements.

In England the scarcity of wood has been felt to such an extent that a battalion of Canadian lumbermen was recently recruited and sent across for the purpose of cutting down the fine old forests and the magnificent parks in the Old Land. A few days ago a second lumbermen's battalion was ordered recruited in Canada for the purpose of joining their comrades in England. Doubtless Great Britain finds it more economical to bring the men over and have them cut down the trees in England than to provide the ships and the necessary facilities for transporting lumber from Canada to the Motherland. It all goes, however, to show the seriousness of the lumber situation among the warring nations in Europe and serves as a lesson to the prodigal people in the United States and Canada to conserve and safeguard their lumbering resources.

A CLEARING HOUSE.

The summer meeting of the Technical Section of the Canadian Pulp and Paper Association now being held at Niagara Falls is of the utmost interest to the whole pulp and paper industry. There was a time not so many years ago when the college graduate or the technically trained man was laughed at by the self-made business man of the day. In those days the college trained individual did not have a place in modern commerce and industry. To-day, however, all that is changed and the chemist, the engineer, and the technically trained workmen occupy the biggest place in our industrial life.

Although it has only been in existence a few years, the Forest Products' Laboratory at McGill, has done an immense amount of good in testing various kinds of woods, suggesting the substitution of cheaper and inferior timber for the more expensive brands, and in brief, has acted as a great clearing house for the troubles of the lumbermen and the pulp and paper manufacturers of the country. The more the services of this body of men are utilized by the wood using industries of the country, the better it will be for all concerned.

THE DEMAND FOR NEWS-PRINT.

Canadian news-print manufacturers are turning out more paper at the present time than at any time in the history of the industry. For the week ending June 3rd, Canadian paper makers produced 99.3 per cent of maximum output and shipped 99.2 per cent of their production. For the week ending June 10th, they produced 99.3 per cent and shipped 103.1 per cent of maximum production—this in spite of the fact that two Canadian mills were badly crippled in production during both these weeks, owing to floods. During those two weeks the stock of paper on hand at Canadian mills decreased 344 tons, while in the two previous weeks, the stocks decreased 283 tons.

These figures show that the production in Canada is not keeping up to the shipments, and that our reserve stocks are being seriously depleted. With the United States virtually at war with Mexico and a presidential election campaign in full swing, the consumption of news-print in the neighboring Republic will soon show enormous increases. During the past few months there has been a steady increase in the consumption of paper owing to the growth of advertising. Business in the United States is very good and many large national advertisers are turning to the newspapers and making an increasingly large use of them instead of the magazine formerly used. There is also a marked demand for news-print as a substitute for book paper and the makers of good grades of news-print paper are finding a ready market as a substitute for book paper. Altogether it looks as if the demand for paper was to continue.

PRE-REVOLUTIONARY FORESTRY.

A very interesting booklet has been issued by Cornell University on pre-revolutionary forestry in America. Contrary to the general impression that American forestry is of very recent growth, it is pointed out that such first principles as the prevention of forest fires developed with the first American settlement. Only six years after the Pilgrims landed at Plymouth Rock, the colony passed a law aimed to prevent the exhaustion of the local timber supply, and soon after a forest fire law was enacted, prohibiting the setting of forest fires or even the burning of private lands except during certain seasons. Similar laws were enacted by the Massachusetts Bay Colony, the New Haven Settlements, the Providence Plantations, Pennsylvania, and others at about the same or even earlier dates.

Some of the penalties prescribed were very curious. The law of North Carolina compelled the offender to pay a fine of 25 pounds, or, lacking this, "to receive on his bare back thirty-nine lashes, well laid on." Burning of the woods, the law declared, is "destructive to cattle and hogs, extremely prejudicial to soil, and oftentimes of fatal consequences to planters and farmers, by destroying their fences and improvements."

GROUNDWOOD PULP

Second Installment of Bulletin on Ground Wood Pulp, Prepared by J. H. THICKENS and G. C. McNAUGHTON, at the Forest Products' Laboratories in Wisconsin.

(Continued from June 15th issue, Pulp and Paper Magazine.)

Grit of Stone.

If a stone of coarse grit is used considerably less dressing with the burr is necessary to attain the conditions of a sharp stone. In fact, it is difficult to produce a pulp that is not coarse and full of shives. Although a somewhat lower consumption of power per ton of pulp is easily obtained, on account of its coarseness the pulp is not satisfactory from a news-print standpoint. The yield of screenings is much greater, as one would anticipate. As indicated by the Mullen tester, the strength of pulp ground on a coarse grit stone is a trifle less than when made on a finer grit stone and consuming the same amount of power per ton; but when compared as to their respective breaking lengths, there is no difference. However, when the wood is steamed prior to grinding, a strong pulp may be obtained at lower horse-power consumption on the coarse grit stone than on a finer one.

In general, a stone of fine grit yields a fine fibred pulp and a coarse stone a shivy and coarse pulp.

Pressure of Grinding.

In any commercial grinder the pressure at which the wood is forced upon the revolving grindstone—that is, the pressure per square inch of wood surface varies greatly. The variations in pressure are brought about by the binding of the wood in the pockets; the variation of pressure on the grinder cylinder, due to the removal of pressure from one or more of the cylinders, and the use of varying amounts of split wood. For any cylinder pressure, however, it is reasonable to assume that the pressure per square inch on the stone varies between certain limits.

Figure 11 shows the relation of the pressure on the grinder cylinder, the horsepower consumption per ton, power to grinder, and production in 24 hours, the three curves being obtained on surfaces of different degrees of sharpness. It will be noted that with increasing pressure the horsepower consumption per ton decreases, and that the horsepower to the grinder and production in 24 hours increases at a fairly definite rate.

The yield and quality of pulp produced vary to a considerable degree with the pressure of grinding. Finer, although shorter-fibred, pulps are obtained when grinding at higher pressure, the advantage of the use of higher pressure being that it is possible to use a duller stone and obtain finer-fibred pulp with a consumption of the same amount of power as would be used at lower pressure and sharper condition of the stone.

The pressure at which wood is steamed prior to grinding has a marked influence on the speed of rotation of the pulp stone necessary to consume a certain amount of power when the grinding pressure is maintained constant. The wood was steamed at varying pressures for periods of three and six hours, and then ground in two pockets of the grinder at a cylinder

pressure of 60 pounds per square inch. The power to the grinder was maintained at 345 horsepower, and it was utilized by adjusting the peripheral speed of the stone to such a value as was necessary for the sample being tested. When wood which had been steamed for 6 hours at 75 pounds pressure was ground a cylinder pressure of 60 pounds on two pockets and speed of 225 revolutions per minute were necessary to consume the 345 horsepower. When the wood was steamed for 6 hours at 20 pounds, a cylinder pressure of 60 pounds and speed of 187 revolutions per minute were necessary to use up the power.

There are shown in figure 17 the relation of horse-

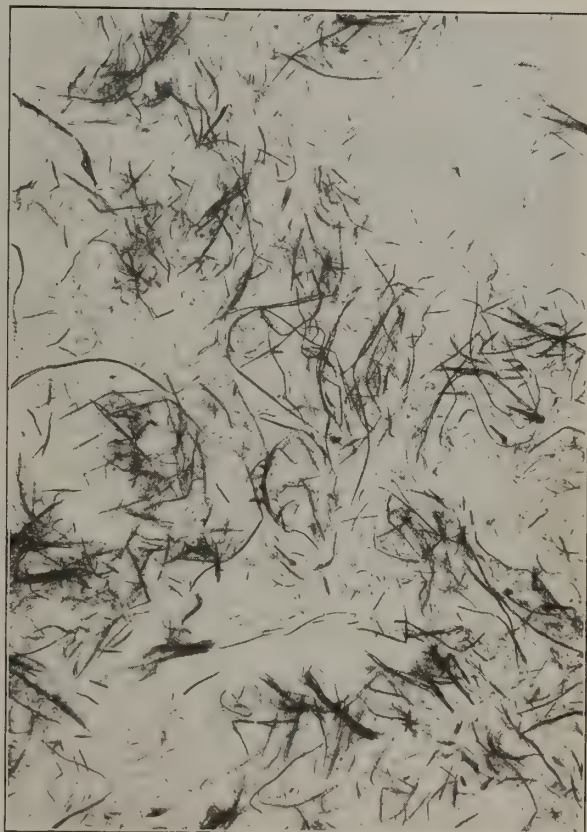


Plate I., Fig. 1.—Spruce Mechanical Pulp (run 2).

power consumption per ton, horsepower to the grinder, and production in 24 hours to the steaming pressure when wood, which had been cooked at different pressures, was ground at constant cylinder pressure and varying speed of rotation of the pulp stone. It will be noted that the horsepower consumption per ton increases with the speed, corresponding to increase in the pressure of steaming, and this increase is due to a reduction in the rate of the production of the pulp.

When wood is steamed for a certain number of hours and at a fixed pressure, then ground with a cer-

tain amount of power to the grinder, but under varying speed of rotation of the pulp stone, it is found that the horsepower consumption per ton increases. In other words, at low speed and high pressure more power is necessary to grind a ton of pulp in 24 hours than at high speed and low pressure. This is due, again, to the reduction in the rate of production.

The peripheral speed of the pulp stone influences the power consumption only slightly. The power consumption per ton decreases somewhat when the speed is increased. It is also shown that the horsepower to the grinder and production in 24 hours increase directly with the speed of the pulp stone. The speed has much less effect upon the quality of the pulp than either the pressure or surface of the stone. Stronger

manufactured by the cold and hot processes as is generally believed.

Other Factors.

Among the other factors which influence the power consumption, production in 24 hours, and the quality and yield of pulp are the amount of seasoning the wood has undergone before grinding, the dry weight per cubic foot, the size of bolts, and the rate of growth.

It is easier to grind green wood and secure a satisfactory pulp than it is to grind seasoned wood. Seasoned wood almost invariably yields a shorter fibred pulp, with a color inferior to that obtained from the green material. Green wood likewise requires less power to grind it, although the difference in the power consumption per ton between that obtained from green and seasoned wood is very small.

The weight per cubic foot of wood is a most important factor, since upon it depends almost entirely the yield per cord. This is best shown where the dry weights of a number of different species are plotted against the yield of pulp per 100 cubic feet of solid rossed wood. It has been found that the yield is almost directly proportional to the bone-dry weight per cubic foot.

The following is a list of woods corresponding to the numbers shown on the curves in figure 20:

- No. 1.—Balsam fir.
- No. 2.—Red fir.
- No. 3.—White fir.
- No. 4.—Alpine fir.
- No. 5.—Amabilis fir.
- No. 6.—Lowland fir.
- No. 7.—Noble fir.
- No. 8.—Eastern hemlock.
- No. 9.—Western hemlock.
- No. 10.—Tamarack.
- No. 11.—Western larch.
- No. 12.—Montana lodgepole pine.
- No. 13.—California lodgepole pine.
- No. 14.—Western yellow pine.
- No. 15.—Jack pine.
- No. 16.—Loblolly pine (fall cut).
- No. 17.—Loblolly pine (spring cut).
- No. 18.—White pine.
- No. 19.—Engelmann spruce (Montana).
- No. 20.—Engelmann spruce (Colorado).
- No. 21.—Sitka spruce.
- No. 22.—White spruce.
- No. 23.—White birch.
- No. 24.—Aspen.x
- No. 25.—Black gum.

xCommonly called "popple" in Wisconsin.

The rate of growth seems to have little effect upon the power consumption or rate of production. When the wood is of large diameter it is necessary to split a considerable portion of it and more or less binding is caused, this resulting in a higher power consumption per ton of pulp. The yield and quality are both slightly influenced by the rate of growth of the wood. The yield is lower from wood of rapid growth than from wood which has grown slowly. The pulp is softer when rapid-growth wood is used, although the strength is practically the same. Generally woods which are highly lignified yield shorter fibred pulps than those having large amounts of sapwood.

The condition of the wood as regards decay has a marked effect on the pulp. With the use of partially



Plate II., Fig. 2.—Spruce Mechanical Pulp (run No. 275).

pulp is obtained, however, at conditions of low speed and high pressure than is obtained at conditions of high speed and low pressure. It is believed, however, that the pressure is more responsible here than the speed. The strength of paper, when the same amount of power is applied, is much less when the power is utilized at high speed and low pressure than at high pressure and low speed.

Temperature of Grinding.

There has always been more or less discussion about the effect of grinding hot or cold. Throughout the experimental work discussed little influence has been noted in grinding under conditions of varying temperature. It is true that the production in 24 hours is less when grinding cold than when the hot process is used, but the variation of the temperature from 125 deg. to 190 deg. F. does not materially influence the rate of production. The pulp is somewhat finer when ground cold, but there is not as much difference between pulps

decayed wood the yield of pulp from a cord is greatly decreased, and while the wood grinds faster than entirely sound wood, giving an increased production and a correspondingly lower power consumption per ton of pulp, the pulp consists principally of extremely short fibres and wood flour, which greatly decrease its strength. (Spruce runs 255 and 256). At the same time the color is materially darker than that of the pulp produced from sound wood.

Power Consumption Per Unit of Strength.

It has always been known that the consumption of a great amount of power will produce pulp of a greater strength. The strength as represented by Mullen or Schopper tests increases with increasing power consumption per ton. The relation between horsepower consumption per ton of pulp per meter of breaking length of paper made from it, and the power consumption in grinding a ton of the pulp is also shown. At low values of power consumption greater strength is produced per horsepower than at high value.

Steamed Wood Pulp and Its Uses.

The pulp made by grinding steamed wood can be used for different purposes, depending largely upon the nature of the grinding process. If a sharp and coarse stone is used a large number of shives will be present and the pulp will serve for the manufacture of box board or similar materials. When ground to a finer state, however, it has been demonstrated that with a mixture of a small amount of chemical fibre bogus kraft paper can be produced which will serve for a cheap wrapping paper. It is hardly likely that spruce could be used for the manufacture of cheap wrapping paper in this manner on account of its price, but other woods, which will be discussed later, also give remarkably good results, and, being available in large quantities, should serve as a raw material for this purpose. Tests made on sheets composed entirely of boiled and steamed ground-wood pulp show that wrapping papers which will test from 0.50 to 0.75 of a point to the pound are easily produced. Wrapping papers of this kind are inclined to be brittle and do not have sufficient strength in tearing or folding without the addition of a small amount of chemical fibre.

Resinous woods, if given a mild steaming or boiling treatment prior to grinding, are rendered much more free from pitch, although the pulp is made very soft and darkened to some extent. The use of this method for the production of newsprint paper would undoubtedly be costly on account of the handling necessary, the cost of steaming, and the loss in yield.

Summary of Influence of Grinding and Cooking Conditions in the Production of Spruce Pulp.

The experiments conducted by the Forest Service, both in cooking spruce prior to grinding and in varying conditions of producing pulp, have led to the following conclusions:

Cooked Wood.

(1) Cooking spruce prior to grinding results in a stronger fibred pulp, although at least 25 per cent more power per ton is required than is used in grinding untreated wood. The horsepower consumption per ton when grinding under conditions of varying cylinder pressure decreases to a minimum at approximately 65 pounds pressure on a 14-inch cylinder; this holds for dull or sharp stones.

(2) When wood is cooked under conditions of constant pressure and varying lengths of time the maxi-

mum power consumption per ton of pulp is obtained after cooking for six hours. This holds true regardless of pressure at which the cooking takes place, between 0 and 75 pounds gauge pressure.

(3) Wood which is cooked at high pressure requires more power per ton of pulp when ground under the same conditions of cylinder pressure, speed, and surface of stone than wood which is cooked at lower pressure, if the duration of the cook is the same. Likewise, the production of pulp in 24 hours is materially less when the wood ground has been cooked at high pressure than if it had been cooked at low pressure.

(4) The yield per cord is influenced very greatly by the length of time the cooking is carried on and the pressure of the cook, being much lower for high pressures than for low and also for long cooking periods than for short.

(5) The power to the grinder increases with speed and pressure of grinding and decreases with the degree of sharpness of stone. There is also a very slight



Plate III., Fig. 1.—Medium Grit Pulpstone.

increase in the power required with increase of temperature, other conditions remaining constant, while the thickness of stock in the grinder pit has almost no influence. Under like conditions of all other factors the power to the grinder is less for steamed wood than for green or seasoned wood untreated.

(6) With a fixed amount of power to the grinder and a fixed grinding pressure, the speed of the pulp stone will vary greatly, depending on the length of time the wood has been steamed and the steaming pressure. Unsteamed wood will grind at low speed, while that steamed a long time will grind at high speed with the same amount of power to the grinder.

(7) There is little if any difference in the quality of pulp obtained as a result of using either the boiling or steaming process. The color, length of fibre, and

yield are practically the same if the boiling or steaming is carried on at the same temperature.

(8) The amount of pulp produced in grinding cooked wood with a fixed amount of power to the grinder is less at high pressure and low speed than it is at low pressure and high speed. This results in a greater horsepower consumption per ton of pulp at high pressure and low speed.

Uncooked Wood.

(1) The rate of production varies directly with pressure, speed, and degree of sharpness of stone. Less pulp is obtained in 24 hours using seasoned wood than with green, and still less using steamed wood, all other conditions being the same. The temperature in-

yield is proportional to the bone-dry weight per cubic foot of wood.

(4) The quality of pulp varies greatly with the surface of the stone, less with the pressure, and least with the speed. The weight per cubic foot and character of wood influence quality to a marked extent, especially the latter; temperature also has a marked influence; pulp of greater strength is obtained at higher temperature; pulp produced at low temperature will take a better finish. Pulp of better color can be obtained from green wood than from seasoned, and stronger pulp can be obtained by cooking the wood prior to grinding. The quality of paper manufactured under exactly the same conditions, but made of pulp produced at different grinder pressures, varies greatly with the grinder pressure and the horsepower consumption per ton of pulp. Mechanical pulp of greatest strength can be produced only by the expenditure of a relatively large amount of power.

PART II.—SUBSTITUTES FOR SPRUCE IN THE MANUFACTURE OF GROUND-WOOD PULP.

Experimental and Commercial Tests on Various Woods.

Grinding tests of 22 different woods were made at the Wausau laboratory. Samples of the experimental pulps were sent to the Madison laboratory for tests to determine their quality. The experimental apparatus and the methods of operation were the same as those used in the case of spruce and described in Forest Service Bulletin 127.

In addition to the experimental tests, "commercial" tests were made of the production of pulp and of the manufacture of paper. The methods employed in the preparation of the wood and the production of pulp were identical with those in the qualitative and quantitative tests, except that more wood was employed and more pulp produced. As a rule, 2.5 tons of bone-dry pulp were manufactured during each test, though in some cases 5 tons were made. Data were recorded on power consumption, rate of production, yield, etc., and as soon as practicable the pulp was shipped to mills in the vicinity of Wausau to be made into paper. The aim in making the paper was to produce as good a grade of news print as possible from the experimental pulps under the standard mill practice of the company to which the pulps were sent. The one divergence from this practice was in the treatment of the pulp in the beater, as in some cases different amounts and kinds of color had to be added to secure the best results. The amount of size, alum, loading, color, etc., was recorded for each beater of pulp, as also were the amounts of sulphite and ground wood used. The size of screen slots, speed of machine, width of wire, etc., were also recorded.

The paper produced from the experimental pulps was given a practical try out on the presses of the New York Herald and the St. Louis Republic. The tests were conducted under the ordinary operating conditions of the pressrooms of the two newspapers. The color of the different papers varied considerably, but this was not assumed to detract from their value for news-print purposes within certain limits. Record was made of the amount of waste, the number and causes of breaks, and the number of papers run from a given quantity of material. Observations were also made on the general operating conditions and the appearance of the sheet when printed. Judgment of

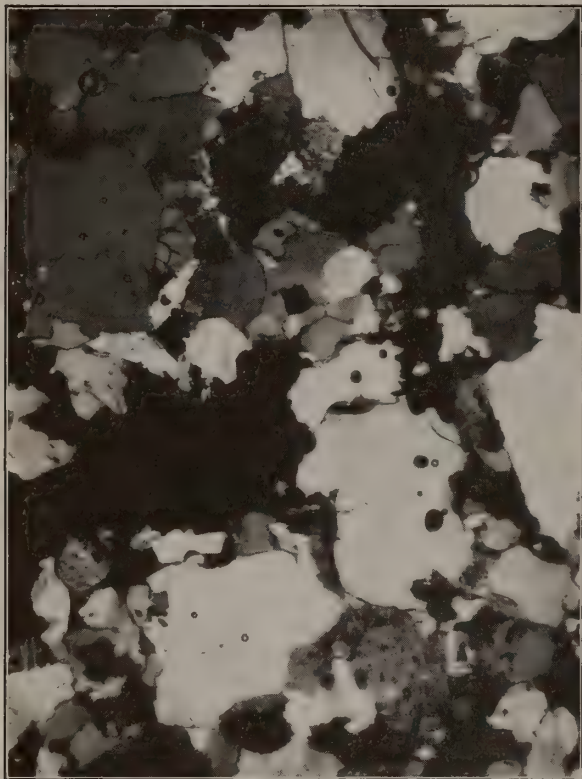


Plate III., Fig. 2.—Coarse Grit Pulpstone.

fluences the rate of production to some extent; less pulp is produced at low temperatures.

(2) The horsepower consumption per ton of pulp when untreated wood is ground increases as the pressure decreases according to a fairly definite law; it is lower on sharp stones than on dull ones, and increases as the speed decreases in much the same manner as it does with pressure. There is, however, not as much difference between the power consumption per ton at low pressure and high pressure. The power consumption is very little influenced by temperature, but it is slightly lower at high temperature. The power consumption is higher for seasoned wood than for green wood, and higher for steamed wood than for either seasoned or green material ground under the same conditions.

(3) The yield of pulp per cord is greater at high pressure than at low, and, while this is true also of the screenings, there is not as much fine material lost in white water when high pressure is used. The yield is not greatly influenced by the surface of the stone, but is slightly higher at high speed than at low. The

these latter factors was left very largely to the practical pressmen.

Kinds of Wood Tested.

The woods tested to determine their suitability for mechanical pulp were as follows:—

Balsam fir (*Abies balsamea*).
 Red fir (*Abies magnifica*).
 White fir (*Abies concolor*).
 Alpine fir (*Abies lasiocarpa*).
 Amabilis fir (*Abies amabilis*).
 Lowland fir (*Abies grandis*).
 Noble fir (*Abies nobilis*).
 Eastern hemlock (*Tsuga canadensis*).
 Western hemlock (*Tsuga heterophylla*).
 Tamarack (*Larix laricina*).
 Western larch (*Larix occidentalis*).
 Lodgepole pine, Montana (*Pinus murrayana*).
 Lodgepole pine, California (*Pinus murrayana*).
 Western yellow pine (*Pinus ponderosa*).
 Jack pine (*Pinus divaricata*).
 Loblolly pine (*Pinus taeda*).
 White pine (*Pinus strobus*).
 Engelmann spruce, Montana (*Picea engelmanni*).
 Engelmann spruce, Colorado (*Picea engelmanni*).
 Sitka spruce (*Picea sitchensis*).
 White spruce (*Picea canadensis*).
 White birch (*Betula papyrifera*).
 xAspen (*Populus tremuloides*).
 Black gum (*Nyssa sylvatica*).

xCalled "popple" in Wisconsin.

Results of Grinding Tests.

On the whole, very little difficulty was encountered in producing pulp from the woods tested. With the conifers, at least, grinding could be done under practically the same conditions employed for spruce. All the substitutes, however, with the possible exception of noble fir and amabilis fir, required the use of more power per ton of pulp. Also, while a good grade of spruce pulp can be produced under widely varying conditions of grinding, the best results were generally obtained from the other woods when the stone was somewhat dull, the pressure high, and the speed of grinding rather slow.

The Firs.

The firs tested were balsam fir (*Abies balsamea*), red fir (*Abies magnifica*), white fir (*Abies concolor*), amabilis fir (*Abies amabilis*), alpine fir (*Abies lasiocarpa*), lowland or grand fir (*Abies grandis*), and noble fir (*Abies nobilis*).

A good sheet of pulp can easily be obtained from balsam fir if the wood is in a green state. Such pulp is as light in color as, if not lighter than, spruce, and a fairly sharp stone can be used in grinding it. Seasoned wood, however, usually shows decay and insect attack, and it is practically impossible to grind it into pulp which will not contain many shives and be somewhat soft. The yield from balsam fir is about 1,910 pounds (bone-dry pulp) per hundred cubic feet of solid rossed wood, or approximately 490 pounds less than the yield from an equal quantity of white spruce.

Red fir, like balsam, is easily ground to a pulp satisfactory for news-print purposes. It required, however, more power per ton of pulp, due possibly to the fact that the wood used in the experiments was of such a large diameter that it had to be split before it could be ground. The pulp had a reddish tinge, which made it less suitable for news-print purposes than

that of some other woods which grow in the same region. The yield was approximately 1,915 pounds (bone dry) per hundred cubic feet of solid rossed wood, or nearly 500 pounds less than for white spruce. On the basis of a cord of rough wood the difference in yield would be even greater on account of red fir's extremely thick bark.

White fir yields a very satisfactory pulp, especially when the wood is green and comes from young trees. Tests conducted on this species, to note the influence of age of the trees on the quality of the pulp produced, showed that pulp from the split wood of trees 40 inches in diameter and 130 feet high was inferior in color, fibre, and yield to pulp obtained from trees of 18 inches in diameter or less. Pulp obtained from the older wood was inclined to be soft and shivy; that from the younger wood did not show these defects. The color of white-fir pulp is better than that of red fir, though not as good as that of balsam. White-fir pulp is ra-

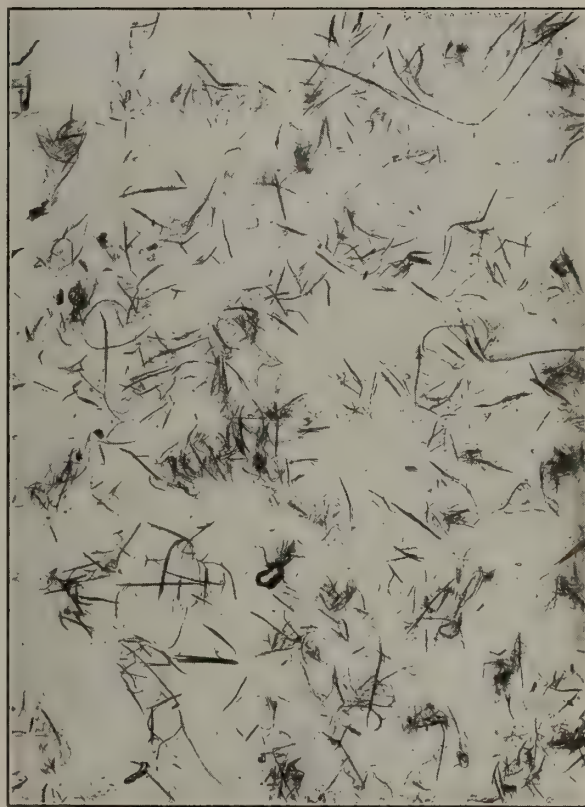


Plate IV., Fig. 1.—White Birch Mechanical Pulp Unsteamed (run No. 2).

ther soft. The yield is approximately 2,000 pounds (bone dry) per hundred cubic feet of solid rossed wood, or about 400 pounds less than white spruce.

Alpine fir yields a very good quality of pulp, which in color is as light as, if not lighter than, spruce pulp. It can be ground with a fairly sharp stone and without an unusual expenditure of power. The result is a pulp very satisfactory for news-print purposes. The yield is approximately 2,060 pounds (bone dry) per hundred cubic feet of solid rossed wood. This wood is usually free from knots and other irregularities, and has a fairly thin, smooth bark.

Amabilis fir readily grinds to a pulp suitable for news-print purposes. The color of the pulp is slightly grayish, but an excellent fibre can be produced with a sharp stone and a reasonable amount of power. In

strength the pulp is about equal to that obtained from spruce. The wood used in the tests was split from large logs having a number of good-sized knots. The yield is approximately 1,870 pounds (bone dry) per hundred cubic feet of solid rossed wood. As in the case of red fir, the thick bark of amabilis fir would result in decreasing the yield were the latter figured on the basis of a rough-piled cord.

Lowland or grand fir can be ground on a fairly sharp stone to produce pulp well adapted for news-print paper. The quality is not up to that of balsam or amabilis fir, but is better than that of white, alpine, or red fir. The pulp produced at the laboratory had a slightly grayish cast, which in some measure might be due to the heart rot that was beginning to attack many of the logs. The yield was ap-



Plate IV., Fig. 2.—Steamed (run No. 2), White Birch Mechanical Pulp.

proximately 1,950 pounds (bone dry) per hundred cubic feet of solid rossed wood.

Noble fir readily yields a pulp satisfactory for news-print purposes. Like white spruce, it can be ground with a wide variation of power consumption. The pulp has a marked pinkish tinge, which is objectionable, but the fibres are of unusual length and strength, though with a tendency to coarseness. The wood tested was supplied from a large tree freshly cut and was remarkably free from knots. The yield was approximately 1,920 pounds (bone dry) per hundred cubic feet of solid rossed wood, or about 480 pounds less than that from an equal amount of spruce.

The Hemlocks.

Eastern hemlock (*Tsuga canadensis*) requires a considerable amount of power for the production of satisfactory pulp. The wood must also be of fairly small

diameter and of very good quality. Even under the best conditions, eastern hemlock pulp does not present a good appearance; the fibres are short, and it has a decided reddish tinge. Moreover, it is very hard to produce pulp which will not crack along the edges when the laps are folded. However, even with the handicap of short fibers, a pulp satisfactory for news-print purposes can be produced. The yield from eastern hemlock is approximately 2,030 pounds per hundred cubic feet of solid rossed wood (370 pounds less than from an equal amount of white spruce), though the same ratio would not be evident if the basis were a cord of rough wood.

Western hemlock (*Tsuga heterophylla*) can be ground at much higher pressures and with a sharper stone than eastern hemlock. The pulp produced is of very good quality and aside from its grayish color compares well with white spruce. It is far superior to that from eastern hemlock. The yield is about 2,160 pounds per hundred cubic feet of solid rossed wood, or 240 pounds less than that from white spruce, though the bark of western hemlock is much heavier than that of the latter species.

The Larches.

Tamarack (*Larix laricina*) produces a very good quality of pulp with a reasonable amount of power. In color, however, the pulp is a decidedly grayish green. It would probably serve for news-print paper if used with spruce sulphite or mixed with spruce ground wood. In any event, it could be used for wrapping paper. The yield is approximately 2,620 pounds per hundred cubic feet of solid rossed wood, or about 220 pounds more than from an equal amount of white spruce.

Western larch (*Larix occidentalis*) yields a very inferior pulp. The product is difficult to operate on the wet machine, and the pulp stone must be rough, but not sharp, to secure the best results. In other words, the pulp must have coarse fibres and a relatively large number of shives. The color, a decided brown, is objectionable. The yield from western larch was only 2,100 pounds per hundred cubic feet of solid rossed wood, though on the basis of the dry weight of the wood it should have been at least 2,300 pounds. This difference is probably due to the high proportion of the wood substance that is soluble in water and to the brittleness of the heartwood, so that a large percentage of the yield is lost in the white water.

The Pines.

Both the California and Montana lodgepole pine (*Pinus murrayana*) yield pulp of very good quality. The wood can be ground under ordinary conditions and does not require the consumption of a large amount of power. Satisfactory results are obtained when the wood is ground at high pressures and at high speed, provided the stone is somewhat dull. The color of the pulp from both varieties compares favorably with that of white spruce, though the Montana wood is somewhat lighter than the California. The resin did not prove objectionable. Montana lodgepole pine yielded approximately 2,140 pounds of pulp (bone dry) per hundred cubic feet of rossed wood, while California trees yielded about 1,920 pounds. The difference was due to the greater age, larger size, and lighter weight of the California wood.

Western yellow pine (*Pinus ponderosa*) can be ground under a wide variety of conditions. The pulp

has a fairly long, coarse fibre and is invariably soft. In color it tends toward a creamy, resembling to some extent that obtained from jack pine. While the wood used in the test contained considerable pitch, this did not cause much trouble either in the grinding process or in the operation of the wet machine. The wood used was cut in October, and it is reasonable to suppose that material cut after the sap had gone down would have been better. The fact that the majority of the tests were made after the wood had seasoned from one to one and one-half years might also account for the more satisfactory operation of the material. The yield was approximately 2,060 pounds per hundred cubic feet of solid rossed wood.

Jack pine (*Pinus divaricata*) yields a very good pulp when ground with a rather dull stone, necessitating, of course, a high power consumption. The pulp produced at a consumption of from 90 to 100 horsepower per ton for 24 hours compares favorably with white spruce pulp made with a somewhat lower power consumption. In color jack pine is creamish or even brownish, and the pitch may cause trouble on the felts, especially if the wood is not seasoned or has not been ponded for a considerable period of time. The best results can be obtained from pitchy woods if the trees are cut when the sap is down. The yield of jack-pine pulp per hundred cubic feet of solid rossed wood was about 200 pounds less than that from an equal amount of white spruce.

Loblolly pine (*Pinus taeda*) requires a dull stone and consequently an expenditure of a large amount of power, but does not yield a pulp of as good a quality as may be obtained from the other pines tested. Although hardly suitable for news-print purposes, loblolly-pine pulp could no doubt be used as a filler. Tests were made on wood cut in the spring and allowed to remain in the forest until the bark became loosened and on wood cut in the fall and split for firewood. The fall-cut wood produced a creamy colored pulp, while the spring-cut wood gave one of a brownish shade. Practically no other difference was noted in the quality. The yield from the fall-cut wood was about 2,500 pounds per hundred cubic feet of rossed wood, while that from the spring-cut wood was 2,400 pounds, the amount in each case being proportional to the weight per cubic foot of the wood.

Through a mistake in shipment a quantity of white pine (*Pinus strobus*) was received at the laboratory. It had not been the intention to test this wood, since its value for lumber eliminates it from consideration as a possible substitute for spruce. Tests were made on it, however, since it was at hand. It can be ground on a fairly sharp stone to yield fibres of good strength and excellent color. The pulp contains a considerable amount of pitch, and, like that from the other pines, is inclined to be soft. The yield was approximately 1,885 pounds per hundred cubic feet of solid rossed wood.

The Spruces.

Engelmann spruce (*Picea engelmanni*) can be ground under the same conditions used for white spruce. The pulp has an excellent color and a long strong fibre. The fact that the wood ground at the laboratory was in a green state undoubtedly made it easier to produce a good grade of pulp. Wood obtained from Colorado in the form of small logs showed no difference in quality from similar material obtained from Mon-

tana, though the latter, owing to its greater weight per cubic foot, yielded about 2,250 pounds of pulp (bone dry) per hundred cubic feet of rossed wood against 2,000 pounds for the Colorado material.

Sitka spruce (*Picea sitchensis*) yields a pulp of very good quality, though not equal to that from white spruce. Although the wood can be ground under practically any condition of speed, sharpness of stone, and grinder pressure, the fibres are not as fine and long as those of the white spruce. In color, moreover, Sitka spruce pulp is inclined to be grayish. The wood tested was cut during the latter part of April and contained considerable pitch. It undoubtedly would have run better had it been cut earlier in the year. The yield was 2,100 pounds per hundred cubic feet of solid rossed wood, or about 200 pounds less than that from an equal amount of white spruce.

The Hardwoods.

Aspen (*Populus tremuloides*) requires the consump-

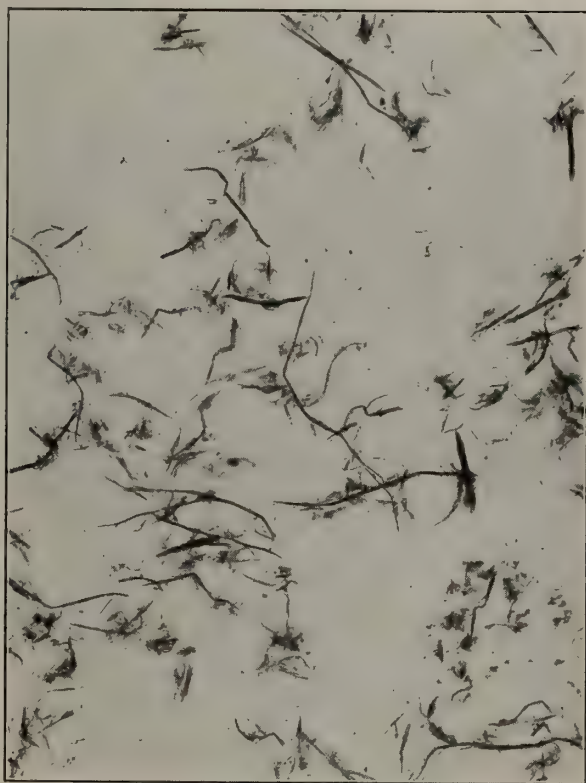


Plate XII., Fig. 1.—Balsam Fir Mechanical Pulp (run 14), Unsteamed.

tion of a large amount of power to produce pulp which will run satisfactorily on the wet machine. If the pulp stone is too sharp or a less amount of power is used, the pulp will be very short. When mixed with spruce, however, it operates very satisfactorily. Aspen pulp possesses good color, although it is likely to contain black specks of bark unless knots are removed from the wood before it is ground. The yield was approximately 2,200 pounds per hundred cubic feet of solid rossed wood.

White birch (*Betula papyrifera*) yields a pulp in which the fibres are short, though very fine. It is necessary to use a very dull stone in the grinding process, and even then laps crack along the edges when folded. The pulp, moreover, has a decidedly pinkish tinge, but the ground wood could undoubtedly be

used as a filler in the production of certain grades of paper. The yield per hundred cubic feet is very high, approximately 2,950 pounds, or 550 pounds more than that from an equal amount of spruce. On the basis of a rough cord, however, this difference would be materially reduced, since white birch logs have a thick bark and are often crooked.

Black gum (*Nyssa sylvatica*) yields a fibre that in many ways resembles that obtained from white birch. It is extremely short, but forms a tougher sheet than coniferous fibres of the same length. Considerable power must be expended to produce laps that can be taken off the wet machine satisfactorily. The pulp is not promising from a news-print standpoint, but could be used as a filler or mixed with pulp of a better grade. In color it is very white, ranking high in this respect

ever, with aspen and white birch, which produce much stronger pulps when treated before grinding, the product comparing favorably in color and toughness with spruce pulp. The fibres of the aspen and white birch were shorter, it is true, than those of spruce, but the felting qualities of the hardwood pulps are better than those of spruce pulp. Steamed aspen and white birch can be ground with a comparatively small amount of power to produce the kind of pulp just described.

A heavy loss in wood substance was noted in the case of all the species tested except western larch. The fibres of the latter wood seem to become tougher as the result of cooking, and do not grind up to a fine powder which passes through the meshes of the cylinder mold.

Microscopic Comparison of Ground-Wood Fibres.

Plates IV to XII are photomicrographs of the ground-wood fibres obtained from the various species tested. It is not possible, of course, to gauge accurately from such photographs the pulp-making qualities of the fibres. Length of fibre does not necessarily mean strength, for a stronger pulp can be obtained from fibres which, though quite short, will felt well. Steamed white birch pulp, for example, will test as high in strength as longer-fibred material from the pines, larches, and hemlocks. However, the photographs make it possible to compare the characteristics of the fibres of one kind of wood with those of another kind, especially since the lodgepole pine, western hemlock, western larch, red fir, balsam, white birch, jack pine, hemlock, and tamarack were ground under the same conditions of pressure, speed, surface of stone, etc. For some of these species photographs of both cooked and uncooked fibres are shown. The cooked-wood specimens were not treated in the same manner, nor were they ground under like conditions.

In the case of birch (Pl. IV.) it will be seen that the uncooked pulp is very short and contains much wood flour, while the cooked fibres are fairly long and very fine. When run into papers without the addition of sulphite the steamed pulp showed a strength under vest of 0.51 point per pound and 5.8 points per thousandth inch of thickness.

The aspen fibres (shown in Pl. V.) appear to be even shorter than those of the birch. The steamed pulp when run into a 63-pound sheet gave a Mullen test of 0.51 point per pound and 6.2 points per thousandth inch of thickness.

Between the cooked and uncooked hemlock fibres (shown in Pl. VI.) there is more contrast in respect to length than in the case of birch and poplar. The cooked hemlock when run into a 55-pound sheet without sulphite gave a Mullen test of 0.51 point per pound and 6 points per thousandth inch of thickness.

Both the steamed and unsteamed jack pine (shown in Pl. VII.) are remarkably free from wood flour and short fibre. The steamed-wood sample, when run into a 43-pound sheet without sulphite, gave a Mullen test of 0.47 point per pound and 4.5 points per thousandth inch of thickness.

In Plate VIII., which shows steamed and unsteamed tamarack fibres, the much greater length of the former is apparent.

Plates IV, VI to X, and XII, figure 1, show the fibres from a number of different woods ground in the natural state under the same conditions. With the exception of western larch, the fibres are of very good



Plate XII., Fig. 2.—Noble Fir Mechanical Pulp Unsteamed (run 2).

among the woods tested. Steaming the wood prior to grinding gives a stronger pulp, but not to the extent observed in the case of birch similarly treated. The yield of pulp from black gum is approximately 2,600 pounds per hundred cubic feet of solid rossed wood.

Woods Steamed Previous to Grinding.

In addition to the tests on untreated wood, other tests were made on steamed material. Practically all of the conifers yielded fairly strong, brownish-colored pulps suitable for the production of board and cheap grades of brown wrapping paper. Balsam fir, noble fir, amabilis fir, Alpine fir, and white and Engelmann spruce pulps showed longer fibres and felted somewhat better than those from the other woods. When steamed all of the conifers required the consumption of a relatively large amount of power for the production of satisfactory pulps. This was not the case, how-

quality and compare well with those of spruce. So far as length and fineness go, the fibres shown in Plates VII, X, and XII are fully equal to spruce.

Experimental Manufacture of Paper.

A limited amount of paper (waterleaf) was made experimentally at the Madison laboratory from the various pulps and tested for strength and color. In every case the conditions of manufacture were identical, and no coloring matter was added to any of the pulps in the beater. The paper machine used was too small to permit of reliable data being obtained upon such points as operation of the pulp on the machine, calendering, and the like.

In the matter of color the various wood fibres (unsteamed) may be arranged in the order given below, the basis being the number of parts of black which each sample contained, that with the smallest number ranking first. It should be remembered that the arrangement is made as the result of tests on many different samples of paper from the same wood, rather than on the particular samples which accompany this bulletin, and also that the different woods were in various stages of seasoning when ground into pulp, a fact which might materially influence their relative color rating:

- 1.—Alpine fir.
- 2.—White spruce.
- 3.—Engelmann spruce.
- 4.—Black gum.
- 5.—Lowland fir.
- 6.—Montana lodgepole pine.
- 7.—Loblolly pine (fall cut).
- 8.—White pine.
- 9.—Balsam fir.
- 10.—White fir (young wood).
- 11.—Western yellow pine.
- 12.—California lodgepole pine.
- 13.—Amabilis fir.
- 14.—Jack pine.
- 15.—White fir (old and young trees mixed).
- 16.—Noble fir.
- 17.—Loblolly pine (spring cut).
- 18.—Aspen.
- 19.—White birch.
- 20.—Sitka spruce.
- 21.—Eastern hemlock.
- 22.—Red fir.
- 23.—Tamarack.
- 24.—Western hemlock.
- 25.—Larch.

White, Alpine, amabilis, and balsam fir are light in color, comparing very favorably in this respect with white spruce. Red fir and noble fir, however, have a pinkish tinge, as has eastern hemlock and white birch. Western hemlock is grayish. Lodgepole pine has a yellowish white, and jack pine and loblolly have a brownish tinge. Both western larch and eastern larch (tamarack) are of poor color for news-print purposes, the former being very brown and the latter dark gray. Aspen and black gum have a good color. Sitka spruce is gray, but Engelmann spruce is fully as bright as white spruce.

It is very difficult to obtain reliable data on the relative strength of pulps from different woods, owing to the fact that it is almost impossible to produce them under identical conditions of grinding, especially as regards power consumption per ton, a factor

which largely influences their strength. The result of strength tests made at the laboratory on the experimental pulps seems to indicate, however, that but one of them surpass white spruce pulp. This refers, of course, to the uncooked pulps. Tests made on the steamed pulps indicate that those from the hardwoods produced with a smaller consumption of power surpass white spruce in bursting strength. If the results of tests on the breaking length in meters per horsepower per ton and those of the horsepower per ton per point per pound are averaged for power consumptions of from 80 to 100 horsepower, the experimental woods can be arranged in the following order as regards their strength, the strongest coming first:

- 1.—Noble fir.
- 2.—White spruce.
- 3.—Amabilis fir.
- 4.—Engelmann spruce.
- 5.—Western hemlock.
- 6.—Sitka spruce.
- 7.—Balsam fir.
- 8.—Lowland fir.
- 9.—Red fir.
- 10.—Montana lodgepole pine.
- 11.—White fir.
- 12.—Alpine fir.
- 13.—California lodgepole pine.
- 14.—White pine.
- 15.—Western yellow pine.
- 16.—Tamarack. . .
- 17.—Jack pine.
- 18.—Loblolly pine.
- 19.—Hemlock.
- 20.—Larch.
- 21.—Aspen.
- 22.—Black gum.
- 23.—Birch.

OFF FOR THE FRONT.



SIR WILLIAM PRICE

Head of the firm of Price Brothers and Company who has gone Overseas in Command of a Battalion.

News Print Production Output at New High Record

Mr. G. Steele, of the News-Print Manufacturers' Association, sends out the following report:—

Our last letter accompanying the monthly statement of production and shipments for the month of April was sent out on May 22nd. I hand you herewith a statement of the production and shipments for the month of May, showing the largest daily production of news-print paper which has ever been recorded in the history of the trade. You will observe from a careful study of these figures that in the month of May, 1916, the mills reporting to this Association produced 1,011 tons per day more than was produced in the month of May, 1915. You will further observe that in the month of May, 1916, there was produced an amount of news-print paper equivalent to 93.3 per cent of maximum production, and that there was shipped an amount of news-print paper equivalent to 93.6 per cent of maximum production. You will observe that this is equivalent to normal production, and shipments for all mills reporting to this Association.

You will observe that inventories have increased during the month to the amount of 1,139 tons. It has been reported that various mills belonging to the Asso-

ciation have purchased during the month 1,600 tons of news-print paper from mills making other grades of paper so that inventories practically stand the same as they did at the end of the month of April, and are much below the inventory figures for January 1st, and are about 25 per cent less than they were a year ago. There is now on hand at mills and consuming points an inventory amounting to less than fifteen days' supply of news-print paper for the entire continent.

Up to this writing the month of June shows a state of affairs even stronger than for the month of May, and if it had not been for the determined efforts of the newspaper publishers to retrench in the use of news-print paper, the producers of this grade would be completely swamped with the insistent demands for supplies which could not be met. I do not know of a single mill on the North American continent which has a ton of paper to sell nor an extra capacity. The usual summer let up in demand has not materialized at all, and it now looks as if it would not materialize to any marked extent, and the hope of the accumulation of reserved stocks looking forward to the tremendous fall demand which is sure to develop is vanishing daily. Consequently, there is little hope of our being able to supply sufficient paper to newspaper publishers to take care of their requirements during the fall months.

United States Mills.

1915.									
Year average . . .	33	1,232,560	3,976	1,001,662	3,231	81.2	1,031,832	83.7	54,592
1915.									
May	26	103,844	3,994	77,516	2,981	74.6	84,897	81.7	67,288
1916.									
January	26	101,166	3,891	88,522	3,405	87.5	88,461	87.4	54,255
February	25	97,275	3,891	82,566	3,303	84.4	81,712	83.5	55,616
2 months	51	198,441	3,891	171,088	3,355	86.2	170,173	85.7	.....
March	27	105,057	3,891	91,110	3,375	86.7	96,305	91.6	51,523
3 months	78	303,498	3,891	262,198	3,362	86.3	266,478	87.8	.....
April	25	97,275	3,891	87,860	3,514	89.8	91,655	93.7	48,665
4 months	103	400,773	3,891	350,058	3,398	87.3	358,133	89.3	.....
May	27	105,057	3,891	96,378	3,569	91.7	95,959	91.3	50,746
5 months	130	505,830	3,891	446,436	3,434	88.2	454,092	89.7	.....

Canadian Mills.

1915.									
Year Average . .	11	503,285	1,624	428,858	1,383	85.2	428,821	85.2	25,898
1915.									
May	26	39,286	1,511	34,306	1,319	87.3	33,968	86.4	31,729
1916.									
January	25	43,950	1,758	42,229	1,689	96.0	38,356	87.2	29,831
February	25	43,950	1,758	41,833	1,673	95.1	41,244	93.8	30,485
2 months	50	87,900	1,758	84,062	1,681	95.6	79,600	90.5	.....
March	27	47,466	1,758	45,694	1,692	96.2	47,200	99.4	28,979
3 months	77	135,366	1,758	129,756	1,685	95.8	126,800	93.6	.....
April	25	43,950	1,758	41,572	1,663	94.5	46,785	106.4	23,766
4 months	102	179,316	1,758	171,328	1,680	95.5	173,585	96.8	.....
May	27	48,627	1,801	47,048	1,743	96.7	48,006	98.7	22,824
5 months	129	227,943	1,767	218,376	1,693	95.8	221,591	97.2	.....

United States & Canadian Mills.

1915.									
Year average . .	44	1,735,845	5,600	1,430,520	4,615	82.4	1,460,653	84.1	80,490
1915.									
May	43	143,130	5,505	111,822	4,301	78.1	118,865	83.0	99,017
1916.									
January	44	145,116	5,649	130,751	5,094	90.6	126,817	87.3	84,086
February	44	141,225	5,649	124,399	4,976	88.0	122,956	87.0	86,101
2 months . . . . .	..	286,341	5,649	255, 150	5,036	89.1	249,773	87.2	.....

March	44	152,523	5,649	136,804	5,067	89.6	143,505	94.0	80,502
3 months . . . . .	..	438,864	5,649	391,954	5,047	89.3	393,278	89.6	.....
April	44	141,225	5,649	129,432	5,177	91.6	138,440	98.0	72,431
4 months . . . . .	..	580,089	5,649	521,386	5,078	89.8	531,718	91.6	.....
May	44	153,684	5,692	143,426	5,312	93.3	143,965	93.6	73,570
5 months . . . . .	..	733,773	5,658	664,812	5,127	90.6	675,683	92.0	.....

Vocational Education in Pulp and Paper Mill Towns

By T. LINSEY CROSSLEY

Vocational education is a step in the direction of conservation of time for children of families whose position, financially or geographically, is such that, at an early age, these children will be found in the ranks of bread-winners.

It can be considered first from the viewpoint of the child. The writer has in mind a child, who, at the age of three years and six months, knew that the steel rod going in and out of the cylinder of an engine was a piston rod. His playmate referred to it as a "worker." It is as easy for a child to learn the proper name for an object as it is to learn the wrong one. Children are exceedingly apt in the study of mechanics from concrete examples. If the work in Geometry, Algebra, and other branches of mathematics were preceded by an elementary study of applied mechanics and manual training, these studies would mean much more to the pupils in the schools than now.

Vocational education aims to put into the child's mind, at as early an age as possible, some of the knowledge that will be required in the work by which he will earn his living. In the view of the writer, much time should be given to endeavor to impress upon even the youngest pupils the value of right proportions or straight lines. There should not be one standard of a square for children, and another more correct square for grown-ups. It would be better for children to use rule and compass before trying free-hand drawing. Children spend a great deal of time playing with toys which do not in any way add to their stock of useful knowledge, and learn much nonsense which occupies mind and time to the exclusion of ideas set in better phrases. The conservation of children's thoughts and time is nothing new. It merely needs frequent iteration. A normal child of twelve might, without mental strain, have as much useful knowledge as the average normal child has at fourteen or fifteen. Child life would be made no less happy, if plays were directed along useful lines, instead of being allowed to drift in any way that suggests itself to the child.

The second consideration is from the viewpoint of the mill, and it may seem a long distance view, too, for in Canada we are forced to approach technical education from the very first steps.

At a recent meeting of the Technical Section of the Pulp and Paper Association, a discussion of the question of technical education brought out the fact that, in paper and pulp communities, there was much illiteracy and little ambition on the part of employees to improve their positions by taking advantage of openings for educational improvement. It is impera-

tive, therefore, that the question be considered from the ground up. The awakened interest in the school will spread into the home in many cases.

The failure to desire the advantages of education is, in many communities, deplorable. In conversation with the father of a boy whose right hand had just been taken off in a mill accident, the writer suggested that, as the lad was unusually intelligent, and would receive some compensation from the company, he would better be sent to school, having far better chance to get on by using his head than by trying to earn a living with one hand. The father said that school would cost him twenty-five cents a month, and he could not afford it. The boy, when recovered was given a job of odd duties in the mill, at which he will probably continue as long as health permits. A few months' schooling might have furnished just the incentive needed for the bright lad's brain to make him a really useful member of the community.

What our mills lose in output and by waste due to lack of even elementary education cannot be computed. Of course, it is not considered necessary or even expedient that all men working in a mill should have technical education, but it is essential that all workers should be able to read, and that most workers should be able also to write. While learning at least good intellect will be aroused which would otherwise remain dormant.

If, in addition to reading and writing, the child enters industrial life with some knowledge of elementary physics and chemistry, he becomes useful far sooner than he would under other circumstances. He gets more done; his foreman's time is saved, and his employer gets a better return.

From the community viewpoint, vocational education is desirable. It should tend to awaken interest in the local leading industry, and bring about a better understanding between the town and the mill.

In a pulpwood town, a few lessons in the elements of forestry would stimulate the interest of all the children to some extent; at least, in the value of forests to the community and need of fire prevention.

It is contended that few elementary teachers have the necessary knowledge to teach this special work. This deficiency should be not difficult to supply. In all mills there are a few men of technical training who would be glad to give the children a talk on some of the points of elementary science as applied in the mills.

We all know that in the higher classes of the schools chemistry and physics are included in the curriculum, but the work is done in a very perfunctory way. The old-fashioned weekly "object lesson" period could be the basis of work to extend chemistry and physics into industrial applications.

The school teachers in mill communities could be allowed to visit one department of the mill say once a week with a group of pupils not exceeding five. If more were interested, the same department could be visited by another group the following week, and the

two groups could compare notes in a half hour discussion at some time. If two teachers were available, the pupils could be divided. Four or five pupils is quite enough for the attention of the teacher and foreman or technical man who would accompany them. A chemist or engineer would be the best conductor for these small parties.

If teachers and members of the mill staff were to co-operate in using ways and means of arousing the interest of pupils in industrial work, the writer is sure that results would abundantly justify their efforts.

(This article was written before the appearance of Mr. Astle's very useful article in the March 15th number of the Pulp and Paper Magazine and is only offered now as a matter of keeping this subject before the Pulp and Paper Makers of Canada.

BRITISH IMPORTATIONS OF PULP.

The great change in the paper trade may be gathered from a brief examination of the British Board of Trade returns. Last month the total importation of chemical pulp from Sweden was less than 1,000 tons which compares with almost 10,000 tons in the corresponding month last year, while only 150 tons of wood pulp was brought in from Sweden. Notwithstanding that the chemical pulp imported was only one-tenth of that brought in in April, 1915, the value has not fallen by anything approaching an equal proportion. For the first four months of the year the total quantity of chemical dry wood pulp imported was 53,361 tons, the principal contributors being Sweden and Norway. For the same period in 1915 the quantity imported was 65,505 tons and for 1914 79,643 tons. The difference between 1916 and 1915 was 12,144 tons less for 1916, yet the value of the 1916 importations was £733,007 against £602,605, while the value of the 1916 importations compared with those of 1914 was fully £70,000 more although the quantity actually brought in was 26,000 tons less, the 1914 importations being 79,643 tons.

CANADA'S NEWS-PRINT PRODUCTION.

Based on records in the office of G. F. Steele, secretary of the News-print Manufacturers' Association, there was recently made up a statement showing approximately the annual production of news-print and hanging paper in Canada at the present time, and the probable disposition of it. This estimate is as follows:

Canadian production	540,000 tons
Used in Canada	110,000 tons
Exported	430,000 tons
Exported:	
To United States	377,000 tons
To other countries.. . . .	53,000 tons
Total	430,000 tons

THE NORWEGIAN PULP AND PAPER MARKET.

Prices for all kinds of Norwegian chemical pulps continue to rise, but there is practically nothing to be had and the trifle lots available fetch fancy prices. It is therefore impossible to give any figures whatever.

FRONTIER PULP AND PAPER CO., LTD.

The Frontier Pulp and Paper Co., Ltd., with head office at Thorold, has been incorporated with a capital of \$50,000.

WAYAGAMACK NOT BUILDING NEW MILL.

Mr. J. N. Greenshields, President of the Wayagamack Pulp and Paper Company, gives an emphatic denial to the newspaper report regarding an item published a few days ago that his company was about to build a new sulphite mill at Three Rivers. Mr. Greenshields declares that there is not an atom of truth in this report and that the matter has not even been discussed by the directors. The Wayagamack Company has been making rapid progress but evidently the directors do not feel that the time is ripe for an extension of the company's plant.

TRADE OPENINGS.

The Department of Trade and Commerce announce that a firm in Glasgow, with good connection, desires to secure agencies of Canadian paper manufacturers, while two Argentine paper mills are in the market for Canadian ground wood and chemical sulphite pulp.

Also a Glasgow firm, having a permit for importation, would like cuttings from Canadian firms for wood-pulp.

TO BUILD MILL ON LAKE ST. JOHN.

The International Land and Lumber Company, Limited, are about to build a hundred ton pulp mill on the River Ashuapmauchan, in the Lake St. John region, in northern Quebec. They own over 314 square miles of pulp limits on the north-western shore of Lake St. John extensive water-power, and are making elaborate plans for a model townsite. The head office of the company is in Ottawa whence the bulk of the capital has come. Among the Ottawates on the directorate are Messrs. J. L. Bates, President; R. N. Bates, Vice-President, and Thomas Askwith, while Mr. P. Prevost is acting for the management.

PULP AND PAPER NOTES.

The Riordan Paper Company, of Montreal, have decided to commence planting operations on their limits.

The Canada Paper Company, Ltd., of Windsor Mills, Quebec, intends to cut fire lines and clean up the debris on their holdings this spring.

The Hon. Jules Allard, Minister of Lands and Forests in Quebec, has been made a member of the Legislative Council of the Province.

The Canadian Forestry Association is enlisting the help of the boards of trade of the different Ontario towns and cities in its fight for better fire protection and administration of the forest lands of that province. The association has gained one hundred and forty new members since February and is in better condition than ever.

The construction of the Canadian Pacific Grand Trunk system, Canadian Northern and other company-managed roads, in 1914, caused the burning of 191,000 acres, valued at a little over \$400,000, of which about half represented the value of merchantable timber. The building of the Hudson Bay Railway has caused a loss in forest destruction estimated at \$250,000, and the area burned at over 500,000 acres.

A new method of preventing sap stain in lumber is being developed at the Forest Products Laboratory at Madison, Wisconsin, in an effort to reduce the waste in lumber, and thus again make the lumberman more efficient in conserving his supply.

PULP AND PAPER NEWS

The capital stock of the Automatic Paper Box Company, Limited, 180 John Street, Toronto, has been increased from \$125,000 to \$200,000 by the creation of 750 new shares of \$100 each.

Joseph Gibson, acting secretary of the Spanish River Pulp and Paper Mills, Limited, Toronto, was married at St. Jame's Anglican Church, Ingersoll, recently to Miss Janet Bella Brown. Mr. Gibson and bride have taken up their residence at 51 Bloor Street, Toronto, and are receiving the congratulations of their friends.

W. G. Linehan is now acting sales manager for the Laurentide Co., Montreal, during the absence of J. H. A. Acer, who has been granted relief from duty until after the war. Lieut. Acer is now with the 244th Battalion which is being recruited in Montreal. Howard Smith, Vice-President of the Canadian Pulp and Paper Association, will be presiding officer of that body while Lieut. Acer, who is the President, is engaged in military service.

Arthur Hobson, who has for some years been connected with the office of the Toronto Paper Mfg. Co., Toronto, has enlisted for foreign service and is now with the Artillery at Barriefield camp, Kingston.

The Walker Press, Limited, of Paris, Ont., with a capital stock of forty thousand dollars, has been incorporated to carry on the business of engraving, printing and publishing.

A. A. McDiarmid, chief engineer of the Mattagami Pulp and Paper Co., Limited, Toronto, has joined the ranks of the benedicts, being married on June 28 to Miss L. Abbott, of Bathurst, N.B. He was presented with a handsome remembrance from the staff and, with his bride, is spending a few days among the Allegany mountains.

Joseph T. Rolph, Vice-President of Rolph and Clark, Limited, lithographers, Toronto, passed away a few days ago in his eighty-fifth year. He was a brother of Frank Rolph, President of the Company, and was the founder of the firm. The deceased had of late years led a retired life and ceased from active participation in the business of the house.

A charter has been granted to George J. McLeod, Limited, of Toronto, with a capital stock of \$40,000 to carry on the business of printers, bookbinders, and publishers. Among the incorporators are George J. McLeod, James C. Murrie and Frank M. Harris.

The many friends of Atwell Fleming, head of the firm of Atwell Fleming Printing Co., printers and bookbinders, Toronto, will sympathize with him in the loss of his wife, who died on June 23. She was the daughter of the late Rev. G. R. Sanderson, B.D., who, for many years, was editor of the Christian Guardian and one of the foremost figures in Methodism. Married to Mr. Fleming in 1880, she had lived in Toronto since 1895. Besides her husband, one daughter and three sons are left.

Harry Wilson, of the Wilson Stationery Co., and the Winnipeg Envelope Co., Winnipeg, spent a few days recently in Toronto and Montreal calling upon the trade. He also made a tour of the mills of the western states.

The new extension of the Interlake Tissue Mills, Merriton, Ont., has been completed. It is 148 feet long, by 72 wide and three storeys high, and is erected of steel, brick and concrete. The addition will be used for a finishing department and the turning out of tissue paper specialties.

H. F. E. Kent, superintendent of W. J. Gage and Co., of Toronto, has been appointed Managing Director of the Kinleith Paper Co., of St. Catharines, succeeding W. P. Gundy, who still retains the Vice-Presidency of the Company.

Mr. Neville has been appointed superintendent of the plant of the Beaver Companies, Limited, at Thorold, Ont., succeeding Mr. Wright, who has gone to Watertown, N.Y. Mr. Neville has entered upon his new duties, and the company are very busy with orders.

A charter has been granted to the Toronto Envelope Co., Limited, which has been incorporated with a capital of \$40,000. Benjamin Pearce, who was formerly in business for himself for many years in Toronto, is understood to be identified with the new concern which will soon start manufacturing operations.

A charter has been granted to the Frontier Pulp and Paper Co., Limited, with a capital stock of \$50,000 and head offices in Thorold, Ont. Among the incorporators are Isaac Traub, Moses D. Feigensohn and Thomas F. Battle, of Niagara Falls, N.Y. It is understood that this is the company, which was to operate and take over the Inland or Colonial pulp plant, at Thorold. The latter was recently leased by the Peerless Pulp Co., and the Frontier Co. will be merely a holding company.

A new industry, which is flourishing at Thorold, Ont., is the Dextrine Company and dextrine is now being manufactured in Canada for the first time. The company manufacture white and yellow dextrines, light and dark British gums, and other pastes used in the manufacture of paper boxes, and by envelope manufacturers, paper mills and bookbinders.

The requirements for men, who desire to join the Forestry Battalion, have been relaxed in the case of laborers to include men up to forty-eight years, who may have lost a finger on either or both hands, or one or two toes, providing the lost digits are not great toes or thumbs.

James McKenzie Robertson, formerly secretary of the MacLean Publishing Co., Limited, Toronto, who was in the service of that firm for twenty-seven years, died recently in Toronto. He had been in poor health for some months, and leaves a wife, three sons and two daughters.

The New York and Pennsylvania Co., of Johnsonburg, Pa., manufacturers of bond, book and cover papers, have been awarded the sum of \$1,069 against Michael Holgevac, Shumacher township, Temiskaming, and for \$250 against H. J. Cadwell, of Carthage, N.Y. It appears that Holgevac sold to the New York and Pennsylvania Co. certain pulp wood for \$1,272. Liens to the extent of \$2,900 were filed against the wood before it was removed and Holgevac subsequently sold

the wood to H. J. Cadwell, treasurer of the Champion Paper Co., Carthage, N.Y. Judgment was awarded by Hon. Mr. Justice Sutherland, Toronto, last week.

Sir William Price, head of the firm of Price Bros. and Co., who is leaving for England in command of his Battalion, is resigning the Chairmanship of the Quebec Harbor Commissioners. The company have awarded a contract for a new news-print machine, 156 inches in width at the Jonquiere plant, to Charles Walmsley and Co., of Bury, Eng., and it is reported that they are contemplating adding another machine, 205 inches wide, at an early date. The Ha Ha Bay Sulphite Co., who are erecting a new sulphite plant at Bagotville, Que., have let the contract for two, 100 inch dryers, to Charles Walmsley and Co., and the output will be 120 tons per day. It is expected that the plant will be producing pulp early in 1917.

Thomas Gain, sales manager for the Don Valley Paper Mills, Toronto, and C. Nelson Gain, superintendent of the mills, have returned from a business trip through the Province of Quebec, where they were looking into the raw material situation.

Splendid progress is being made on the erection of the dam, power house and the new sulphite plant of the Mattagami Pulp and Paper Co. at Smooth Rock Falls, Ont. The contractors, Morrow and Beatty, have a force of over four hundred men at work, and on the model town site things are getting into shape nicely.

It is expected that pulp wood will increase during the coming winter from thirty-three to fifty per cent owing to the number of men who have gone to the front in connection with the Forestry Battalions and the

acuteness of the labor problem. Great difficulty is now experienced in securing enough labor to handle the wood at the rossing plants and in loading the cars, although most liberal wages are offered.

CIGARETTES FOR RUSSIA.

Some idea of the Russian's fondness for cigarettes may be had from the fact that the Cameron Machine Company of Brooklyn, New York, builders of the Cameron Principle Slitting and Rewinding Machines, are filling an order for use in the Russian tobacco trade calling for ten Cameron Machines to operate on cigarette tissue, and also on the mouth piece stock used in the manufacture of Russian cigarettes.

OPENS NEW OFFICE.

The Jeffrey Manufacturing Company, of Columbus, Ohio, has opened new offices at Dallas and St. Louis. Mr. W. V. Cullen is in charge of the Dallas office, while Mr. J. W. Jones will look after affairs at St. Louis.

EDITOR OF PAPER TRADE JOURNAL DEAD.

Maurice J. Cody, editor of The Paper Trade Journal, died on Wednesday, June 14, in the Brooklyn Hospital, after an operation for intestinal trouble. Mr. Cody was born in Lexington, Mass., fifty-one years ago. He was a graduate of Andover Academy, attended the Harvard Law School, and later read law in Boston. He came to New York twenty years ago. He is survived by his wife and one son.

ON ACTIVE SERVICE.



CAPT ROBT. KIRKPATRICK,
A Former Broker in Paper Maker Chemicals, Who is
Now at the Front. He is a Graduate of
McGill University.

DOING HIS BIT.



CAPT. J. H. A. ACER
Of the Laurentide Company, and President Pulp and
Paper Association, who is going Overseas with
the 244th Battalion.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, June 12, 1916.

One day during the past fortnight the King Paper Company of Kalamazoo, Mich., made a record in its coating department, producing five more tons than was ever produced in any one working day. Officials of the company say that the paper was of ideal quality. The entire mill is now running full force, and the officials of the company deny the report circulated last week that there was any paper spoiled in the making.

* * *

An organization has been perfected by the coarse and wrapping paper dealers of Chicago, which will work in conjunction with the Western Paper Trade Association, principally along the line of bringing about a plan which will enable members to settle vexing questions which arise in relation to credit. A corporation known as the Wrapping Paper Association of Chicago has been incorporated, and officers elected. The names of the first officers elected are as follows: President, A. B. Steindler, of the Inlander Paper Co.; vice-president, H. B. Hollis, of Hollis and Duncan; secretary, John T. Daly, of Daly Bros.; treasurer, Fred Rentz, of the Fred Rentz Paper Co. It is expected that regular meetings will be held from time to time as conditions require, and a general meeting held at least once a year.

* * *

The Westfield River Paper Company, Russell Falls, Mass., has been incorporated at Holyoke, Mass., by Robert H. Holt, Edward Hutchins and John C. Rice. The company is capitalized at \$630,000. The Westfield Paper Company succeeds the Russell Falls Paper Co., which was forced to close some months ago because of financial troubles. The new company has taken over the entire property of the old company, including the plant, and water power on the Westfield River. Work of getting the plant in shape to operate is being pushed along rapidly. About sixty men will be employed when the mill resumes operations, and this number will be increased when business justifies it. According to reports, another mill building will be erected. Philip L. Saltonstall is president of the Westfield River Paper Company, James S. Alexander, vice-president, and William B. Wheelwright, treasurer, all of Boston. James Becker has been engaged as superintendent. The principal product will be glassine paper.

* * *

Continental Paper Bag Company, has issued the following statement withdrawing prices on bags and sacks of all kinds. "This is to advise you that our prices on our entire line of paper bags and sacks of every description are hereby withdrawn. New prices will be mailed to you in a few days, and in the meantime any orders received will be accepted only at the new prices. Any orders en route to us that are received prior to the issuance of any new prices, will be accepted only upon the basis of the new prices."

* * *

A meeting of the Sulphite Bond Division of the Writing Paper Manufacturers' Association was held re-

cently at Chicago, at which time the following trade customs, were adopted in addition to the regular trade customs of the Writing Paper Manufacturers' Association:

1. In addition to the Writing Paper Manufacturers' Association trade custom No. 13, which reads as follows: "There shall be a (minimum) cutting charge of 1/2 cent per pound wherever the regular sizes and weights of the mill are to be cut (to smaller sizes):

"a. This minimum charge of 1/2 cent per pound to be made when cutting any regular size containing not less than 336 square inches (16 x 21) down to and including a size containing not less and 84 square inches (8 x 10 1/2), a charge of 1 cent per pound to be made for cutting a sheet containing 42 square inches.

"b. When cut to small sizes, the charge shall be the same whether the packages are sealed, banded or merely divided by markers.

"2. No exception is to be made to the Writing Paper Manufacturers' Association trade custom No. 16, which reads as follows: "For weights lighter than basis sixteen pounds 17 x 22 500 sheets, an additional price to be charged; in other words, all bond and ream prices 16 pound basis.

"3. There shall be no allowance made for paper untrimmed, instead of trimmed, nor unsealed instead of sealed, nor for both.

* * *

The number of logs to come into the Bangor boom this season will be the smallest in years, owing to the fact that the Eastern Manufacturing Company, which has always taken about half the logs arriving at Bangor, will not saw this year. Estimates place the number of logs to come this season at from 20,000,000 to 25,000,000 feet. For several years, the average amount arriving at the local boom has been between 50,000,000 and 55,000,000 feet.

* * *

The operation of the sulphite mill and the paper mill of the Cherry River Paper Company, at Richwood, W. Va., was on June 1 changed from two tours to three tours, and the hours of the day workers were reduced from ten to nine, without loss of pay. The third tour has already been straightened out in both mills, with the exception of the machine room in the paper mill, where there is still a shortage of backtender and third hands.

* * *

Announcement has been made by Harry H. Cook, vice-president of the Alexandria Paper Company, Alexandria, Ind., that the factory would be operated after June 12 under an 8-hour shift system, giving employment to fifty additional men. Employees of the paper company were granted an increase in wages some time ago.

Edward Wright, who has been connected with the plant of the Beaver Board Company at Niagara Falls, N.Y., has been appointed superintendent of the Herrings mill of the St. Regis Paper Company. Mr. Wright will succeed J. H. Moran, who was recently made superintendent of the mill owned by J. N. Hahn, of

Cleveland, in Watertown. The plant is located on Sewalls Island and was formerly owned and operated by the Cylinder Paper Company.

The Frye Pulpwood Company, of Machias, Me., has sold all its pulpwood now cut, and its mill privilege lease to Eastern Pulpwood Company, which took immediate charge of everything afloat belonging to the former company and expects to do an extensive business for the St. Croix Paper Company.

The J. and J. Rogers Co., of Ausable Forks, N.Y., completed the largest single order for paper in one shipment they have ever had. The order which was in one thickness, was run on the Fourdrinier machine and was started at 4 P.M. Tuesday, the 23rd day of May, and completed at 4 P.M. Wednesday, the 31st. The total pounds made were 602,370 or an average of 75,209 pounds every 24 hours for eight days. The paper is of a special color to be used for making phonograph record envelopes.

Anderson and Jones, Inc., have just incorporated, with offices in Carthage, N.Y., as engineers, architects and appraisers, making a specialty of paper, ground wood and chemical pulp mills. The corporation will also specialize in the necessary power developments and appraisals for financial purposes. The members of the concern, Fred C. Anderson and Fred L. Jones, are both well qualified to make a decided success of their undertaking.

It is reported that the rossing plant of the St. Regis Paper Company at Carthage, N.Y., will be pressed into service this summer to aid the Taggart Paper Company prepare its supply. The St. Regis did not get a stocks of logs last winter, and it was expected that the rossing plant would be down this summer, but this contract made with the Taggart Company will enable the plant to be operated with a large number of hands.

CREOSOTE IMPORTS.

Forty-six per cent of all the coal-tar creosote used in the timber treating industry in the United States last year was imported from Germany and Great Britain. In 1914 the quantity was equivalent to 65 per cent, the falling off in 1915 suggesting a scarcity of foreign supplies as a result of the war.

TO BUILD CREOSOTE PLANT.

The Boston Elevated Railway Company, realizing the economic importance of treated ties, bridge timber, etc.; the service of which is double and treble that of untreated wood, states through its president, Gen. Wm. A. Bancroft, that his company will build a small treating plant equipped for the Full-Cell or Rueping Process, to be located at their general yard, South Boston, Massachusetts.

According to statistics just compiled jointly by the American Wood Preserves' Association and the Forest Service at Washington, D.C., there was treated at 102 plants in the year 1915 a total of 141,858,963 cubic feet of timber, which compares with 159,582,639 cu. ft. by 94 plants in 1914; a decrease in quantity of about 11 per cent in 1915. Of the 1915 output, cross ties contributed 78.4 per cent of the total, construction timbers, 8.3 per cent, paving blocks, 5.4 per cent, piling 4.4 per cent, poles 1.7 per cent, and the balance consisted of cross arms, lumber, etc.

THE HUMAN ELEMENT IN BUSINESS.

The human element must be recognized to a greater extent than in the past. Labor is being educated to the point that it believes it should share in the profits. There has been a great deal of study given to this, and many plants are in actual operation where labor is recognized in this way. This is a workable plan in large corporations, but when we consider that there are only 462 corporations doing an annual business of \$5,000,000 or more out of the 250,000 business corporations in this country, it is plain that some plan must be worked out so that the employes of small manufacturers may receive a just remuneration for their labor. I also believe that if the actual conditions of a company were put before a committee of the employes, that demands would not be made that are being made to-day; that is, they would recognize the injustice of their demands, and would use their influence to improve conditions if it were understood that they were to share in the results obtained by improved conditions.

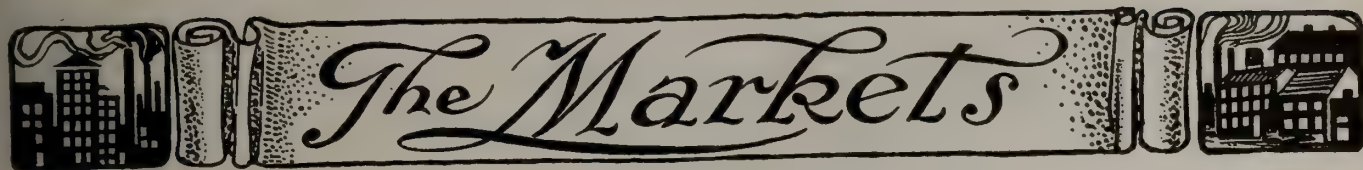
I am about ready to suggest in my own mill the appointment of a committee from the employes that can meet with me at least once a month so that we can discuss the physical condition of the mill, and make such suggestions as they think wise to improve the efficiency of any man or department. All of this with the idea that if wages and conditions are to be improved they must lend their assistance to this end.—From address of President Frank L. Moore, at annual meeting of the American Paper & Pulp Association.

May I express the opinion that efficient methods cannot be unmindful of the human element. The heads of the various firms and corporations represented in our association are naturally seeking a satisfactory income for themselves. Is it not probable that this end will best be secured by such equitable recognition of employes as is quite natural for them to desire, and not out of the power of the managers to grant? None of us run a business of the size of the Steel Corporation so that we can all maintain if we will a more or less personal touch with our employes. If this relationship be equitable and fair, I believe that it will contribute materially not only to our mutual happiness, but to our success as well.

The head of a great steel company in this country said recently in personal conversation that the best road to success in the next decade would be through absolute justice to one's employes, and that those who would make the most shining success would be those who adhered most closely to the golden rule. This man was not preaching, but was laying down a business principle which he believed to be necessary for permanent success. I have no right nor desire to preach to this body of successful business men, but I venture in closing to pass on his sentiments with the personal comment that I believe he is absolutely correct.—From address of Pres. Joseph T. Alling, at annual meeting of the National Paper Trade Association in the United States Paper Maker.

MAINE BALSAM FIR DYING.

It is reported that the balsam fir in Maine is gradually dying out from some unknown disease. This tree is very susceptible to attacks of fungi and begins to suffer from heart rot at an early age.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The market for news print continues brisk and all the mills have more business than they can attend to. Prices are firm and there is no indication that there will be any early relaxation. More country weeklies are now getting into the dollar and a half class and some trade newspapers are announcing that, owing to the extra cost of from thirty to fifty per cent on book papers and the additional outlay for inks, which runs all the way from ten per cent to five hundred, the latter figure applying to process colors, and the fact that the expense for engravings has augmented from twenty-five to forty per cent, they will no longer carry subscribers who are not paid up and sample lists will be reduced to a minimum.

One leading publication gives the following increases—news print 30 per cent; machine finished paper, thirty per cent; super calendered, thirty; coated, twenty-five; coated, colored, fifty; cover papers, forty; cheap bonds, fifty; cheap grades, colored seventy-five; high grades of bond, twenty-five; high grades, colored, forty; cheap grades of writing, fifty; cheap grades, colored, fifty; high grades, writing, twenty-five; high grades, colored, forty.

There is a great demand for book, bond, writing and ledger paper of all kinds although foreign inquiries have fallen off as none have been filled. The mills all have more business than they can attend to at home. Several plants are thinking of making extensions and among them are the Provincial Paper Mills Co., who, when conditions get normal, will likely build a new plant at Mille Roches, Ont., and instal two machines, 160 and 165 inches wide, which would increase their output by forty tons more per day. The Toronto Paper Manufacturing Company are also thinking of installing another machine which will increase their output at Cornwall by four or five tons a day. Other extensions are heard of and many inquiries are being made as to cost of equipment and building. All the book and writing mills last week advanced prices from three quarters of a cent to a cent and the new schedule went into effect last week. The mills have also changed their terms, starting from July 1st, and on all orders the terms will be net, thirty days, instead of two per cent, thirty days, which has prevailed for several years.

Speaking of material so far as the raw material is concerned a leading paper manufacturer stated this week that on book, bond and writing papers the additional cost was fully sixty per cent while prices had advanced only fifty per cent. He did not think that the former low figure for these papers would ever be restored as the companies had been turning out paper for years at too low a quotation, and now that prices were up, they would in all likelihood stay there.

A circular letter has been issued to members of the trade by one of the largest companies in Canada pointing out how necessary it is for the paper houses and large consumers to give late orders good delivery as the present shortage of men is keenly felt by railways, cartage companies and paper mills. The latter are being forced to the utmost, labor saving conveniences being added in all departments to augment the growing scarcity of human labor. The company ask "Are you doing the same in your own department in order that we may give you as well as our other customers the best service possible. Are your facilities for handling our product as perfect as they can be made? We believe that bringing these facts to your attention will greatly relieve matters as they now stand. The cartage companies inform us that quite often their teams are held two hours and more unloading longer than it usually takes to load a whole car at our mills. We know that this time could, with the proper facilities and under ordinary circumstances be cut down to half an hour. Have you sufficient trucks or moving tables or platforms onto which four or five tons of paper can be transferred immediately, thus leaving the trucking and stacking of same to your convenience, meanwhile releasing the team?"

The price of sulphite pulp continues to mount up and now ninety five dollars is being paid at the mill, which is a record figure. How much higher the quotation will go one cannot tell. A statement was recently made by a leading official of the American Writing Paper Manufacturers' Association to the effect, "that Great Britain was morally although not actually commandeering the entire Canadian production of wood pulp—in other words Canada would not ship any pulp to the United States which Great Britain could use."

This statement is entirely misleading. In March, 1915, the imports of pulp into the United States from Canada were 16,723 tons, of which 7,551 were ground wood pulp, leaving 9,172 tons of chemical pulp. In March, 1916, the imports of pulp from Canada into the United States were 25,461 tons, of which 10,440 were ground wood, leaving 15,021 tons of chemical pulp, showing an increase of over sixty-one per cent. The figures for the nine months ended March, 1915, and March, 1916, show that the increase was even greater, being sixty-seven per cent in sulphite pulp. A leading member of the Canadian trade makes the statement that no pulp is being diverted to Great Britain that should go to the United States and that all contracts entered into with American concerns by Canadian plants have been carried out to the letter even though those contracts covering 1916 were made at only a slight increase over the low figures prevailing for 1915. No advantage has been taken of the forced major clause in any contract by Canadian mills and no thought of cancelling, owing to the war has entered the minds of the manufacturers in the Dominion. Canada intends to retain her commercial connection in the

matter of the sale of her raw products to the United States and to allege that she is yielding up her rights to ship to what world markets she pleases is erroneous as evidenced by the statistics of shipments of pulp and paper across the border.

It is expected that another increase of about a cent will go into effect in kraft paper this week, and that fibres will take a like advance while manila may be pushed up half a cent. Box board of all kinds has just gone up about ten per cent on the average and the mills are weeks behind in filling their orders. The following low prices now prevail f.o.b. Toronto: Grey fold board, \$55; bending board, \$52; non-bending board, \$50; filled board, plain, \$48; straw, chip and jute, white lined on one side, \$48; straw, chip and jute plain, \$45. Colored boards are much higher and extremely hard to get owing to the scarcity and high prices for dyes. All terms are net thirty days.

There has been an advance of a cent in coated papers, making the fourth increase in the last few months and raw stock is difficult to obtain. All the mills are rushed to the limit. The following prices now are the rule: Standard cheap, 9½c; medium, 10¼c; high grade, 11¼c; tints, 11½c; suede white, 13c; suede India, 14c; suede gray, 14½c; seconds, 8c; case lots, one quarter cent more, reams one-half cent more, and less than reams one half cent additional. All toilet and tissue papers are in big demand and mills have to refuse business right and left. Toilet papers, bleached, have gone up about ten per cent and the following is the price list just issued by one of the leading mills, subject to change without notice.

No. 4 White and No. 10 Manila. Nat. and G. W.
20x30- 7-480c... .60c per ream.
24x36-10-480s... .80c per ream

No. 300 White. Natural.
20x30- 7-480c... .80c per ream.
24x36-10-480s... \$1.15 per ream

No. 1 White. All Bleached.
20x30- 7-480s... \$1.00 per ream.
20x36-10-480s... 1.40 per ream.
White Crepe Napkins, 14in. x 14in., banded in 100s,
80c per M.

White Crepe Napkins, 13½in. x 13½in., Spaced in
100s, 70c per M.

White Crepe Napkins, 13½in. x 13½in., Spaced in 100s,
60c per M.

The discount on paper bags has just been decreased ten per cent in 100,000 lots. The prices in all lines of paper stock are firm and there are many inquiries from the mills. Old white cotton, thirds and blues, white shirt cuttings and overall cuttings all show an advance of fifteen to twenty-five cents while roofing stock is stiffer and in good demand. In the higher grades of paper stock there is a feeling that firmer figures will prevail for some time.

All envelope manufacturers and paper box factories are busy and even the increased prices has had no deterrent effect on requisitions. There are many rumors of new sulphite plants being erected in Canada and some mills have projects under way for making all their own sulphite. They will not only produce enough for their own use but will have a surplus to dispose of. At least, two mills will be put up during the coming season in Ontario while a third one is well under way. There is one thing which militates against plants being extended at the present time, and that is the exceptionally high cost of equipment and the fear that the present abnormal conditions may

not continue, after the war, for the finished product. On the other hand, it is felt that Canada should be in a state of "preparedness" to take advantage of the world wide markets after the European strife is ended and develop her export trade with other countries. There appears to be no good reason why the Dominion can not compete with the products of other nations and develop an export trade in book, bond, writing, sulphite pulp, kraft paper, and specialties as great proportionately as she is doing today in the arena of news print.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls), \$2.50 up, at mill, in carload lots.
News (sheets), \$2.75 up, at mill, in carload lots.
Book papers (carload), No. 3, \$6.00.
Book papers (ton lots), No. 3, 6.00c to 7.00c.
Book papers (carload), No. 2, 7.50c to 8.00c.
Book papers (ton lots), No. 2, 7.75c to 8.25c.
Book papers (carload), No. 1, 8.00c to 8.50c.
Book papers (ton lots), No. 1, 8.25c to 8.75c.
Sulphite bonds, 9c up.
Writings, 7½c up.
Grey Browns, \$3.25 to \$4.50.
Fibre, \$5.00 to \$6.00.
Manila No. 1, \$5.00 to \$6.00.
Manila No. 2, \$4.25 to \$4.75.
Manila, B., \$4.00 to \$4.50.
Unglazed Kraft, \$7.50 to \$9.00.
Glazed Kraft, \$8.00 to \$9.50.
Tissues, bleached, 90c to 1.50c.
Tissues, bleached, 1.00c to 1.50c.
Tissues, unbleached, 80c to 1.15c.
Tissues, cap., 60c to 80c.
Natural, greaseproof, 12c to 16c.
Bleached greaseproof, 17c to 21c.
Drug papers, whites and tints, 8c to 10c.
Paper bags, Manila, 40c.
Paper bags, kraft, 25 discount.
Confectionery bags, 20 discount.

Pulp.

Ground wood, \$22 to \$26.
Ground woodpulp (at mill) \$18 to \$20.
Easy Bleaching Sulphite, 95c.
Sulphite, news grade, \$80 up.
Sulphite (bleached), delivered, \$140 to \$150..
Sulphate, delivered, \$120 up.

Paper Stock.

No. 1 hard shavings, \$3.50.
No. 1 soft white shavings, \$3.00.
No. 1 mixed shavings, 65c.
White blanks, \$1.10.
Heavy ledger stock, \$2.25.
No. 2 book stock, \$1.00.
No. 1 book stock, \$1.50.
No. 1 Manila envelope cuttings, \$1.60.
No. 1 print Manilas, 80c.
Folded news, 65c.
Over issues, 65c.
No. 1 clean mixed paper, 52½c.
Old white cotton, \$4.50.
Thirds and blues, \$2.65.
No. 1 white shirt cuttings, \$7.25.
Black overall cuttings, \$2.75.
New light flannelettes, \$5.00.
Ordinary satinets, \$1.85.

Flock, \$2.10.
Tailor Rags, \$1.85.

Quotations, f.o.b. Montreal, are as follows:—

Book—News—Writing and Posters.

Roll News, \$41 to \$45 per ton for large orders; \$60 to \$70 per ton for small orders.
Ream News, \$50 to \$55 per ton for large orders; \$60 to \$70 per ton for small orders.
No. 1 Book, 7.50 to 8.25.
No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.
No. 3 Book M.F., 6.00 in large quantities; 6.75 in small quantities.
Writings, 6.95 to 10.
Writing Manila, 6.95.
Cover Papers, 7½ to 11c per lb., according to colors wanted.
Colored Poster, 6½ to 7½.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
White Wray, Cleaver, 100 lbs. . .	3.15	3.40	3.65
Beaver, Brown wrap 100 lbs. . .	3.75	4.00	4.35
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	4.75	5.10	5.50
No. Manila, Invincible Fibre,			
100 lbs.	5.00	5.35	5.75
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			

NEW YORK MARKETS.

New York, N.Y., June 25, 1916.

Reports received during the past few weeks, show that ground wood pulp is growing firmer and firmer from time to time, and that the possibilities are that it will continue to act in this manner throughout the summer. The grinders state that they are receiving plenty of inquiries, but that they are not in a position to take care of all of the business. In fact, many of the pulp makers have already sold their entire production for the year and are now merely working to fulfill obligations. The other manufacturers are holding for good prices and will not consider new business unless at the very top of the market. The consumption of ground wood pulp continues at its maximum. All of the news mills and the other large consumers are operating their plants continuously, and the prospects are that this situation will not change during the summer and that it will continue throughout the fall. Should the summer be dry, it will mean that a severe shortage of ground wood will result and that prices will be absolutely prohibitive. Present prospects are that the market will witness many changes regardless of what happens and that its upward tendency cannot be altered.

The condition in the market for chemical pulp has become exceedingly acute. During the past week, it was learned that the strike in the Norwegian pulp mills had been settled. However, this was unable to do anything to ease the market. At the present time, it is believed that there is practically no foreign sulphite or

sulphate pulp which is now available to domestic docks. True, there have been some importations recently, but these have been very limited and have all been for immediate consumption. From abroad, no encouragement is received so far as future shipments are concerned. It was believed that after the Baltic Sea had been ready for navigation, the volume of the imports would increase considerably and that the situation would thus be relieved to some extent. However, instead of this, it appears that matters have become worse. Reports are constantly being received from Sweden and Norway which indicate that the pulp producers are still meeting with much trouble in the manufacture of their stock. Raw materials are very scarce and have not deviated from their upward course. Whatever happens, it is believed that the cost of foreign pulp will reach a point where it will be too expensive for domestic use. Even at the present time, the quotations are prohibitive. However, it is understood that Continental Europe is in dire need of sulphite pulp and that it not only is willing but is eager to meet the demands of the pulp manufacturers. The domestic manufacturers of pulp are beginning to withdraw from the market because they are now finding a strong pressure from many sides. A large producer of unbleached sulphite was reported to have withdrawn all quotations during the past week. In bleached sulphite, there is little stock to be had for most of the mills making this product have sold their production ahead. A good demand is current for easy bleaching pulp, because of the scarcity of bleached sulphite. However, there is very little easy bleaching to be had. Kraft continues to be scarce. The amount of domestic stock available at the present time, is practically negligible. Most of the large manufacturers, who formerly were able to sell a large part of their output on the market, now find it more advantageous and more profitable to consume the pulp themselves. This has resulted in taking out of the market large quantities of kraft pulp. The situation has been aggravated by the fact that the importations have been very small. Advices from the other side are far from encouraging.

The situation in the rag market has been growing brighter within the past week. A number of the mills have been inquiring for stock and several fairly large sales were reported. It is said that one mill made a purchase of about 1,000 tons of thirds and blues, thus doing much to strengthen that particular grade. However, the improvement seems to be affecting the entire market. In new rags of all kinds, there has been add-and suit makers in New York City has had considerable and suit makers in New York city has had considerable influence in curtailing the production of new rags and that this fact is now being felt in the rising price. New white shirt cuttings, No. 1, cannot be bought for less than 10½c, and they seem likely to go much higher. Silesias are now at 8c. The scarcity seems fairly acute in washables, for sales have been reported at as much as 6¾c. More strength has been noted in old whites, No. 1. These have been bought for 6¾s. Thirds and blues are quote at 4½c to 4¾c; house soiled whites at 4½c to 5c; black stockings, at 4c to 4½c. The roofing grades have been showing to better advantage and are now ranging as high at 2¼c. There seems to be much confidence that roofing will develop and that prices will go higher. Foreign rags are practically nominal in price, for there is but little stock to be had.

Conditions in the various papers have become firmer and several advances were recorded, during the week,

in writings, wrappings, and in boards. In news-print, the present time, is greater than it has ever been in the situation seems to be getting stronger all of the time. Instead of the demand decreasing at this time, which is considered the dull period, it is stated that the mills are forced to continue to ship as much as they possibly can. This is accredited to the fact that the volume of advertising carried in the newspapers, at the present time, is greater than it has ever been in the history of the trade. In book papers a similar condition seems to exist. There are few book mills which are taking business to-day, and those which are doing so, cannot promise any specified time for delivery. It is said that some of these plants are booked ahead with orders as far as November. A big demand is reported not only in book, but in practically all kinds of papers. In tissue papers, the mills are operating at capacity, trying to take care of their obligations. However, it is still difficult to obtain large quantities of tissue, unless exorbitant prices are paid. Wrappings of all kinds are now more expensive. There is a good demand for manilas, fibres, and krafts. Quotations for boards have advanced tremendously. Chip board, which could have been gotten a year ago, at about \$16 per ton, is to-day difficult to obtain at \$50 per ton. While the demand for boards in New York City, is not so strong as it might be, there is a good demand reported in all other parts of the country.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$21 to \$22.50 at pulp mill.
Ground Wood, No. 2, \$19 at pulp mill.
Unbleached Sulphite, dom., 3.75c at pulp mill.
Easy bleaching, impt., 4½c to 5c.
Unbleached foreign, 4c to 4.25c, ex-dock, N.Y.
Kraft, 4.50c to 5.00c, ex-dock, N.Y.
Bleached, domestic, 6.25c, at pulp mill.
Bleached, foreign, 8c to 13c, ex-dock, N.Y.

Paper.

News (rolls), \$4.00 up, at mill, in carload lots.
News (sheets), \$4.25 up, at mill, in carload lots.
Book papers (carload), No. 3, 6c.
Book papers (ton lots), No. 3, 6¾c.
Book papers (carload), No. 2, 7c.
Book papers (ton lots), No. 2, 7¼c up.
Book papers (carload), No. 1, 7¾c up.
Book papers (ton lots), No. 1, 8c up.
Sulphite bonds, 8c up.
Writings, 7c up.
Grey Browns, \$2.85 to \$3.50.

Fibre, \$4.50 to \$5.50.
Manila No. 1, 5c up.
Manila, No. 2, 4c up.
Manila, B., \$3.35 to \$4.00.
Unglazed Kraft, \$7.50 to \$10.00.
Glazed Kraft, \$9.00 to \$12.00.
Tissues, bleached, 90c to 1.50c.
Tissues, unbleached, 80c to 1.00c.
Tissues, unbleached, 65c to 1.00c.
Natural greaseproof, 10c to 14c.
Bleached greaseproof, 15c to 20c.
Drug papers, whites and tints, 7c to 9c.
Paper bags, Manila, 50, 10 discount.
Paper bags, kraft, 40 discount.
Confectionery bags, 33 1-3 discount.

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Foreign Manufacturers of Special Machinery and Supplies Necessary to Canadian Industry, Textile Machinery and Supplies, Pulp and Paper Makers Machinery and Supplies, Mining Machinery and Supplies, Printers Machinery and Sup-

plies, Fishermen's Supplies — Importers and Manufacturers' Agents — Wholesale Houses: Dry Goods, Men's Wear, Woolens, Linings and Trimmings, Hats and Caps, Millinery, Boots and Shoes, Leather, Groceries, Glass and China, Sporting Goods, Hardware, Flour and Feed — Wholesale Dealers and Exporters: Apples, Bacon and Hams, Bran and Shorts, Butter, Cattle, Cheese, Eggs, Fish, Fruit, Furs (raw), Hay, Hides, Hogs, Honey, Horses, Lard, Maple Syrup and Sugar, Milk (Condensed), Evaporated, and Powdered, Oils (Fish), Pork, Potatoes, Poultry, Produce (General), Pulpwood, Seeds, Wool.

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This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Fraser, W., Montreal
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Sadler & Haworth, Montreal.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Cars, Dump and Flat

Fraser, W., Montreal
Sessenwein Bros., Montreal

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada

Diffusers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digester Lining:

Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Que.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada.
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Fricion Holsts:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Holsts:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

Crookes, Roberts & Co., Sheffield, Eng
 Disston, H. & Sons, Ltd., Toronto, Ont.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotives:

Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built

Sessenwein Bros., Montreal
 Fraser, W., Montreal

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada
 Carthage Machine Co., Carthage, N.Y.
 Downingtown Mfg. Co., East Downingtown, Pa.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Norwood Engineering Co., Cowansville, P.Q.
 Process Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Fraser, W., Montreal.
 Gartshore, J. J., Montreal.
 Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

MILL SUPPLIES---Continued

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

The Watrous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jones & Glassco, Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurttemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Tippet, Arthur P. & Co., Montreal, Canada.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R. Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City.

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.**Kraft:**

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.

Lincoln Paper Mills Co., Ltd., Merriton, Ont.

Ford, J. & Co., Port Neuf.

Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.

Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.

Eddy Co., The E. B., Ltd., Hull, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catherines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmillar, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Tillet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catherines, Ont.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	62

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge, Jas., Chatham, N. B.....	
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6
The Bronson Company.....	14

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Bומר and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	13
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	8
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	68
Christie George, Ltd.....	
Churchill & Sim.....	62
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D

Darling Bros, Ltd.....	
DeCew, J. A.....	64
Dean & Son.....	
Disston, H. & Sons, Ltd.....	6
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
Ferguson, H. S.....	64
J. Ford & Company.....	63
Fraser, W.....	65

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	65
Glens Falls Machine Works.....	6

Groot, H. de	41
--------------------	----

H

Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	62
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K

Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Mackinnon, Holmes & Co.....	48
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	68
Montreal Locomotive Works, Ltd.,..	63
Moore & White Co.....	15

N

Northern Crane Works, Ltd.....	62
Norwood Engineering Co. of Can. Ltd	60

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	62

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	48

S

Sadler and Haworth.....	50
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	
Sessenwein Bros.....	48
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spencer, J. H. & Scns.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co....	64

T

Taylor, J. A.....	
Ticonderoga Machine Works.....	
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd...	7
Voith, J. M.....	12

W

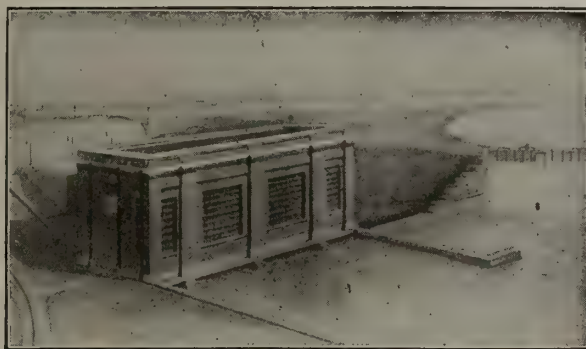
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd...	61
Westbye, P. P.....	11
Wilson-Paterson Co.....	62



Barber Paper Mill, Georgetown, Ont.



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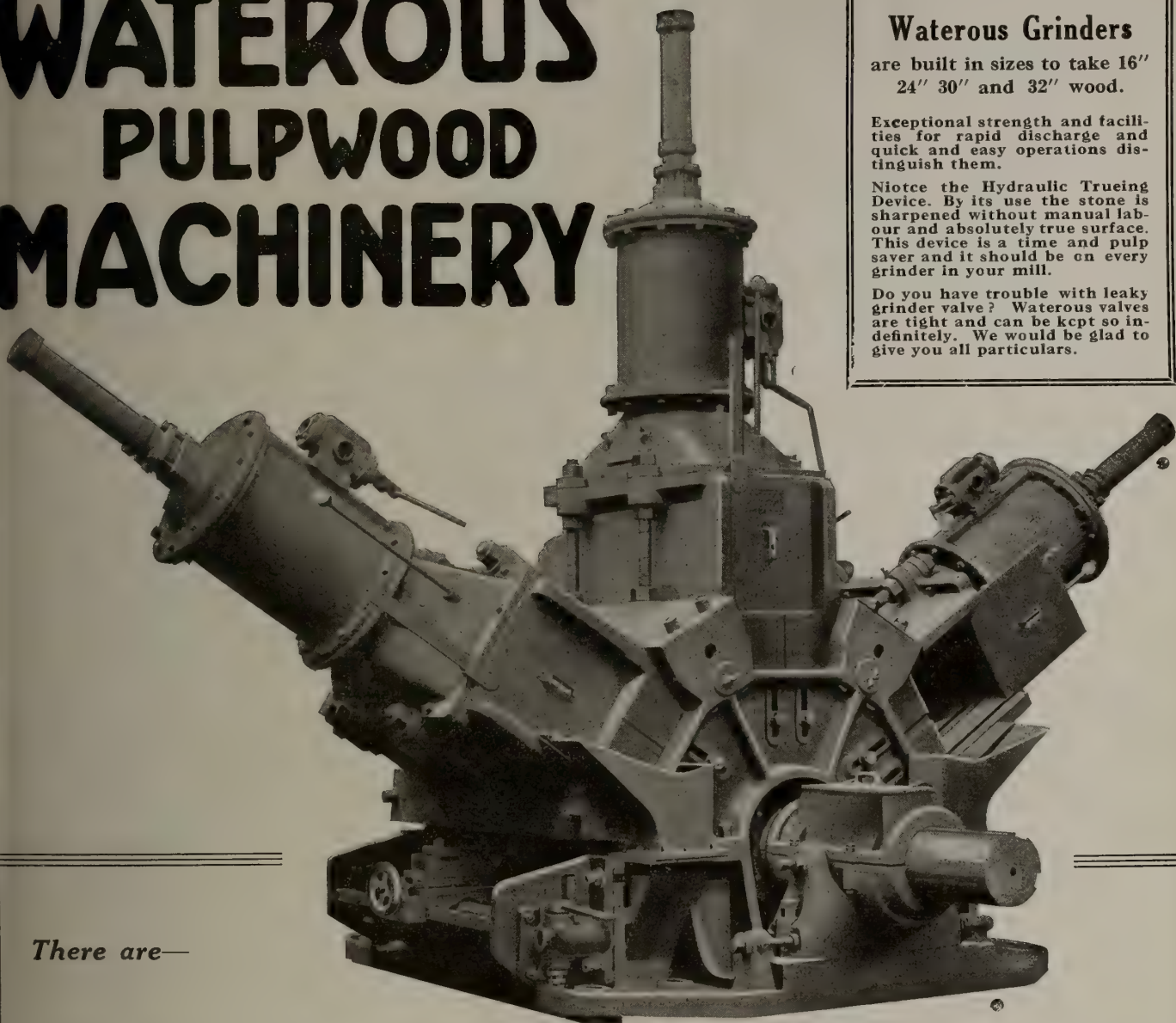
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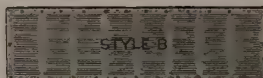
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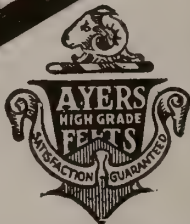
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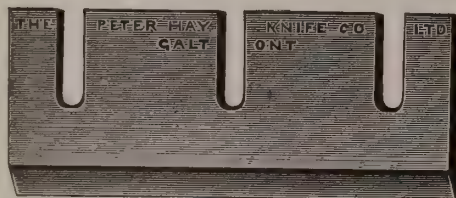
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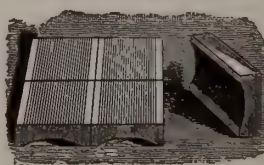
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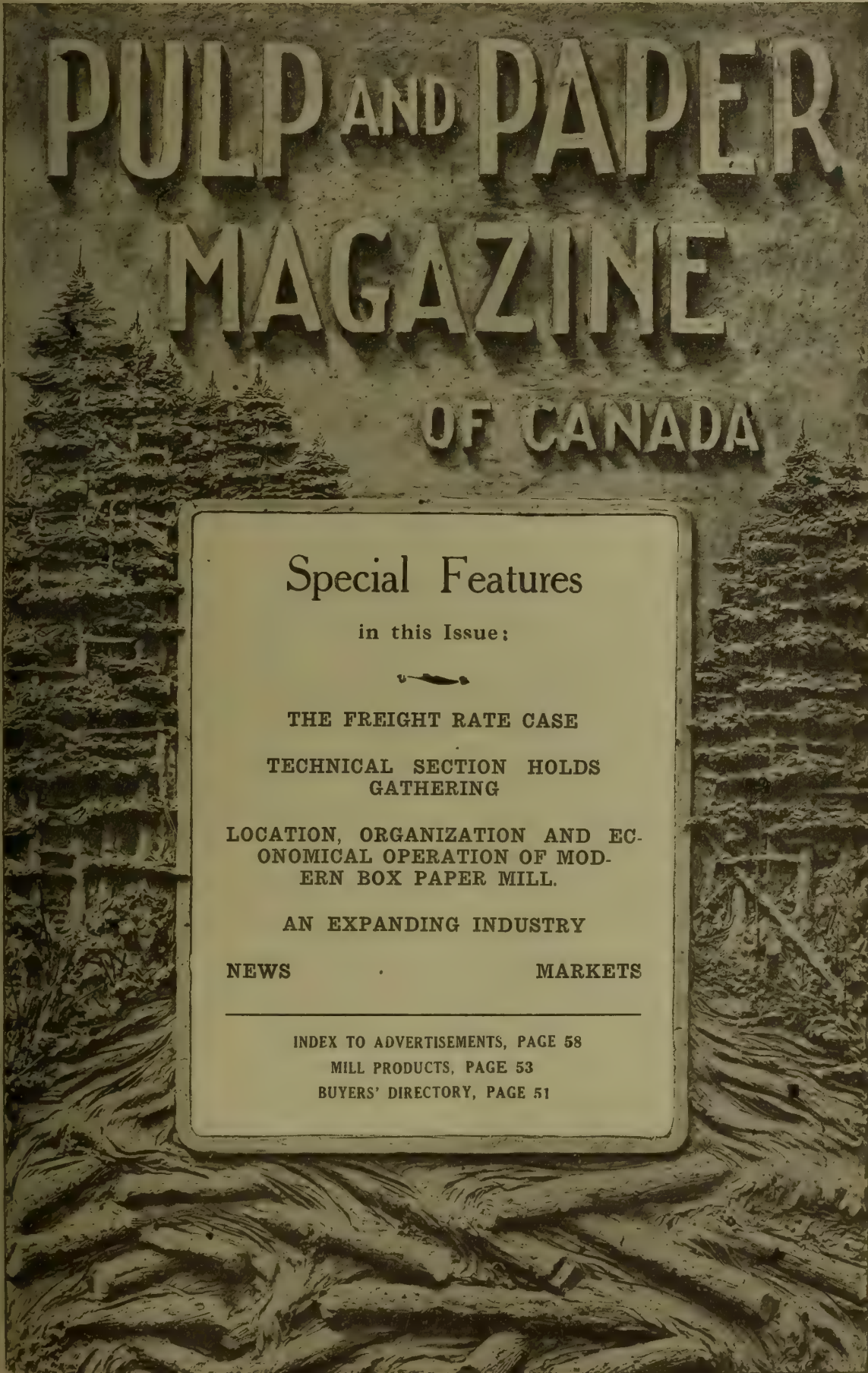
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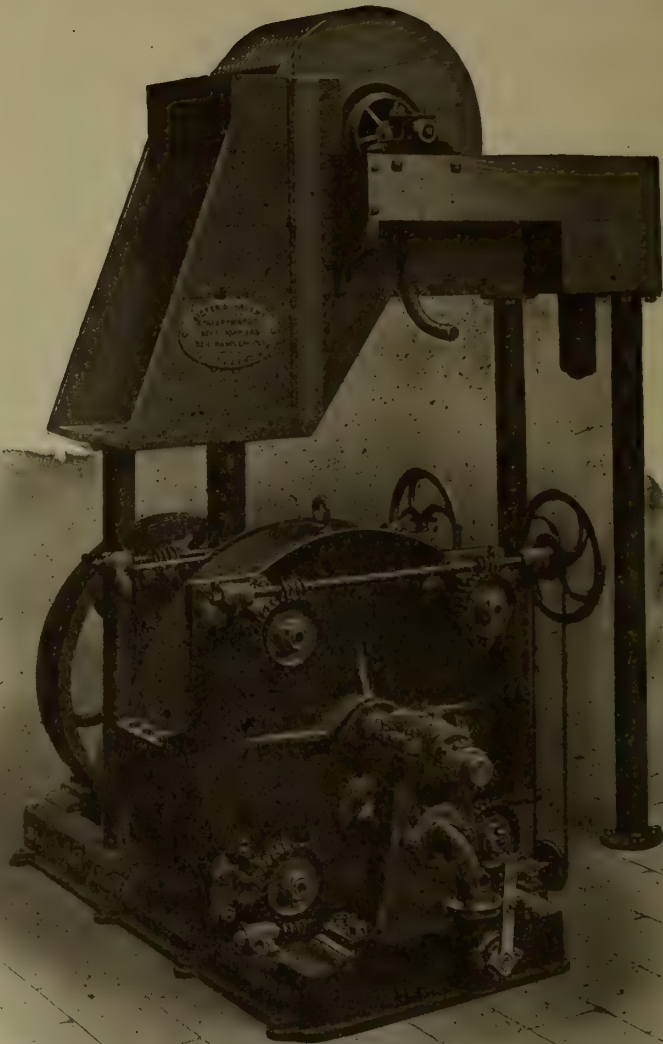
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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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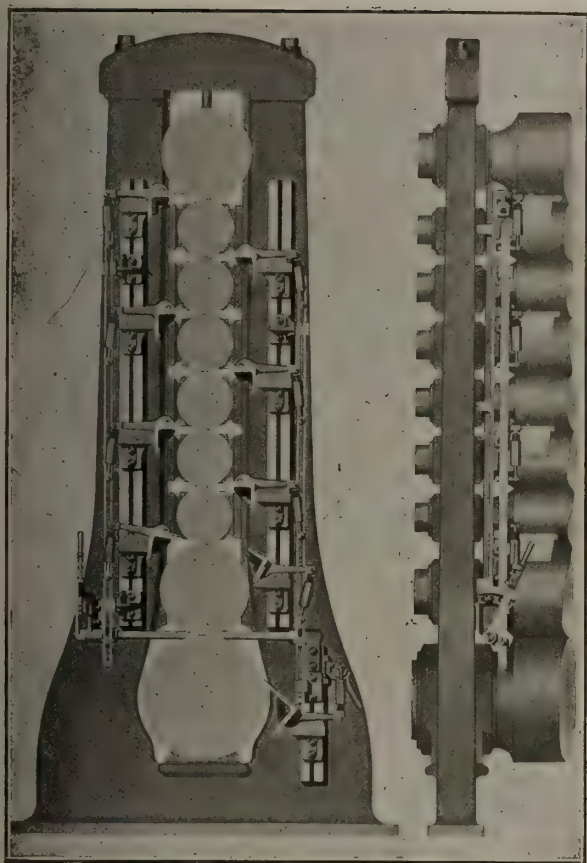
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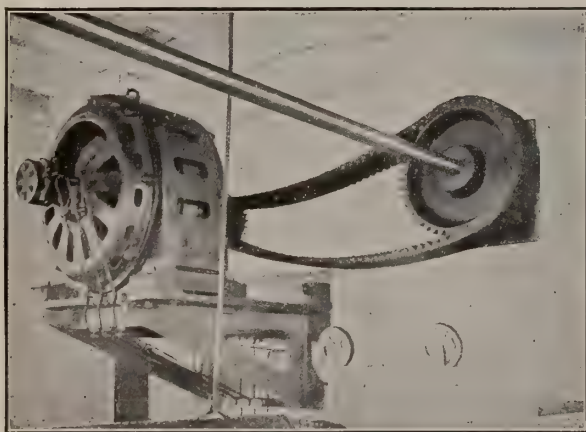
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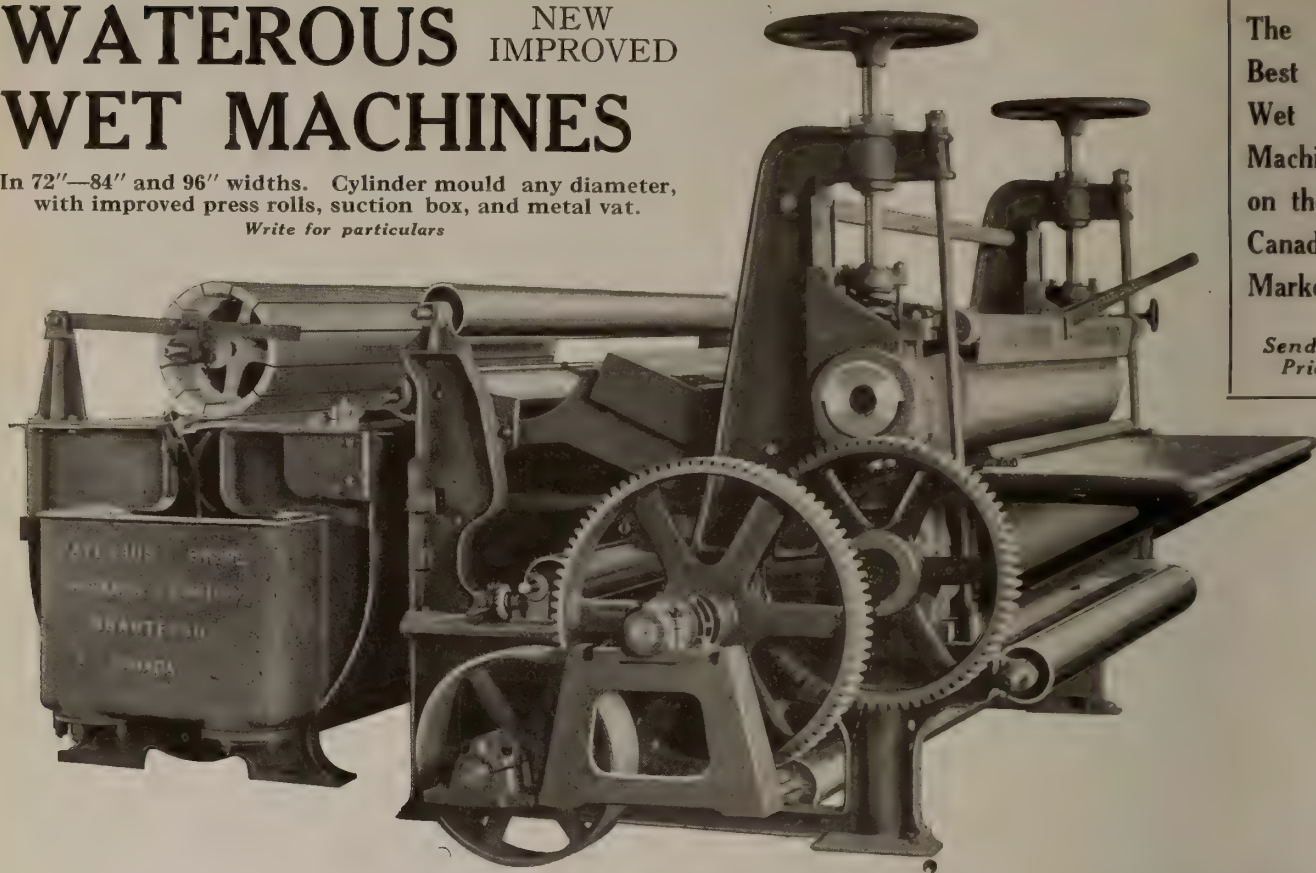
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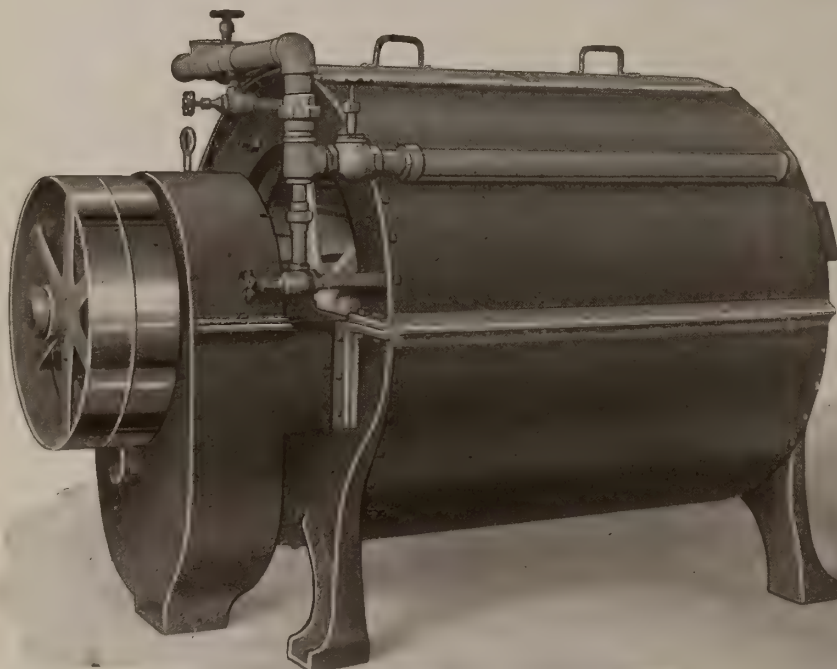
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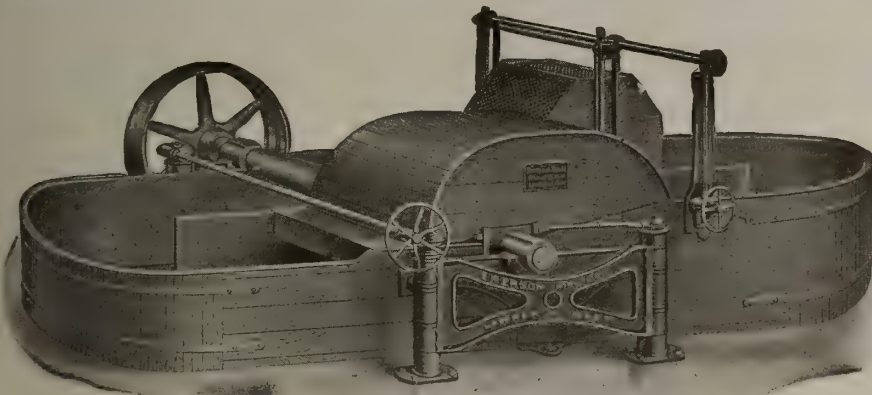
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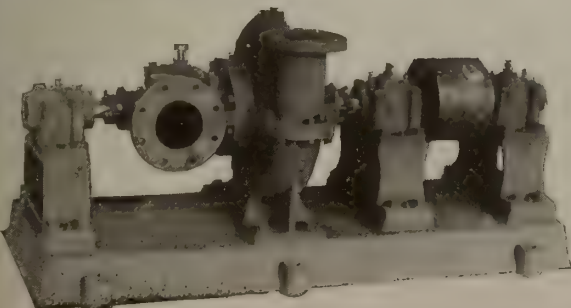
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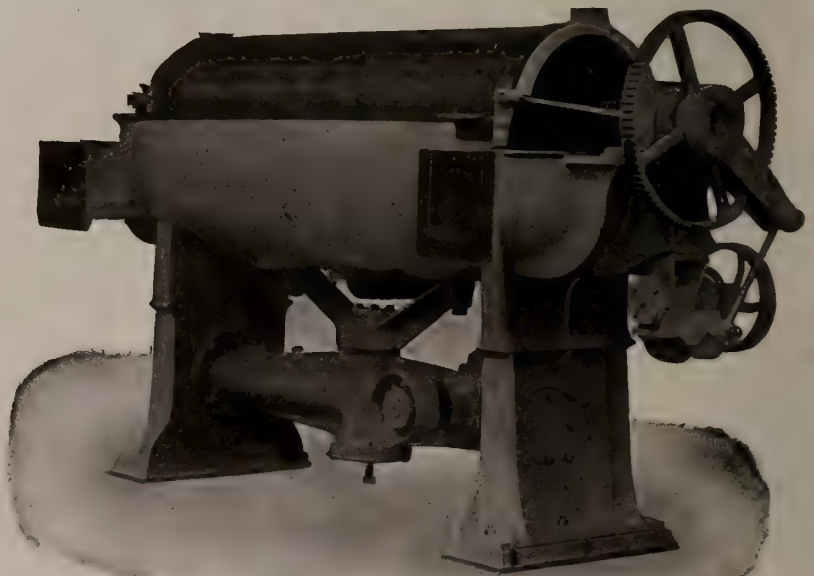
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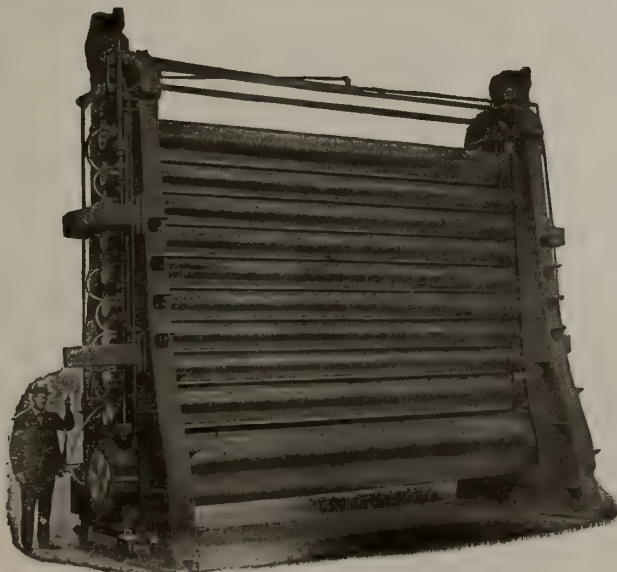
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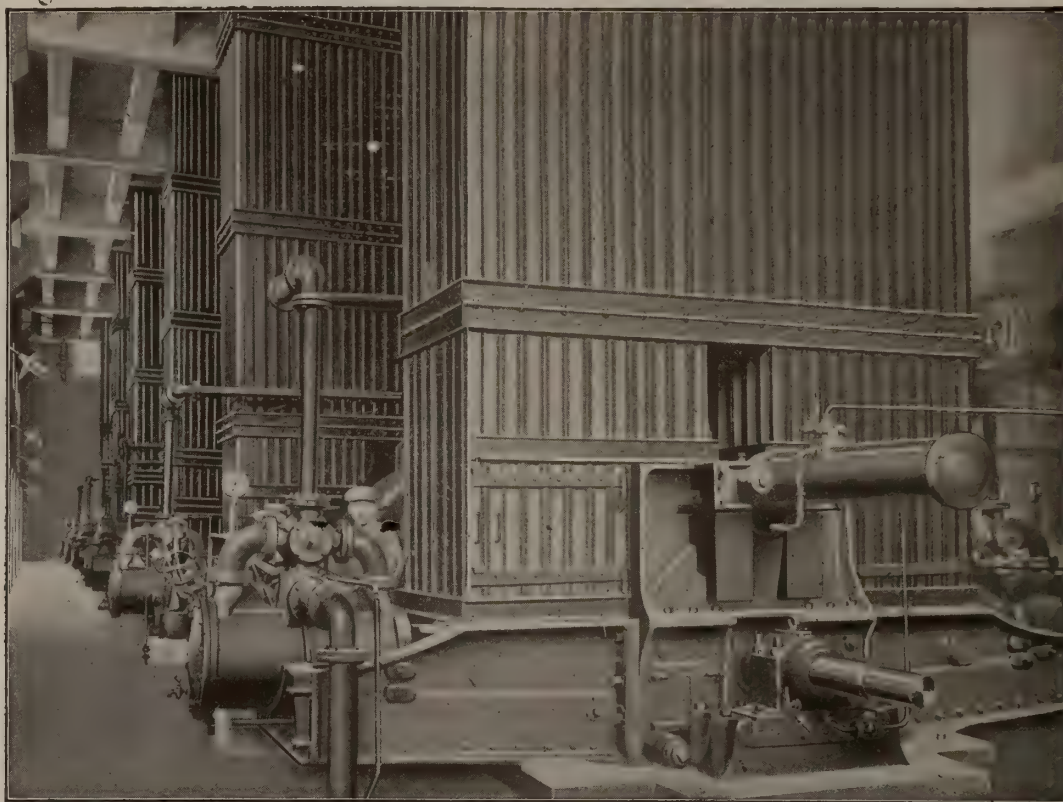


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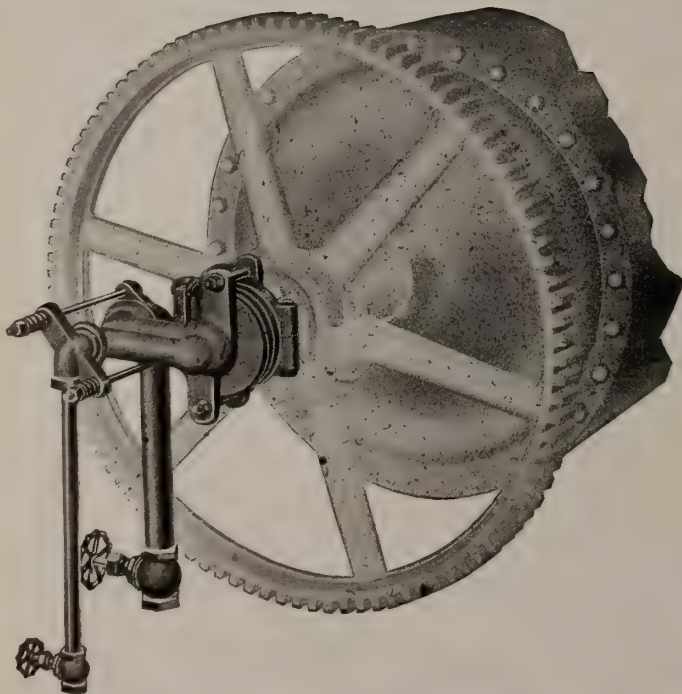
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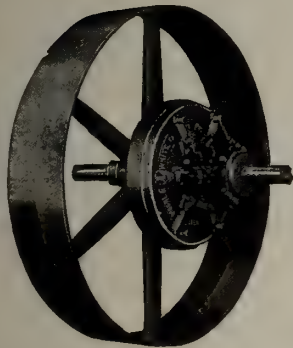
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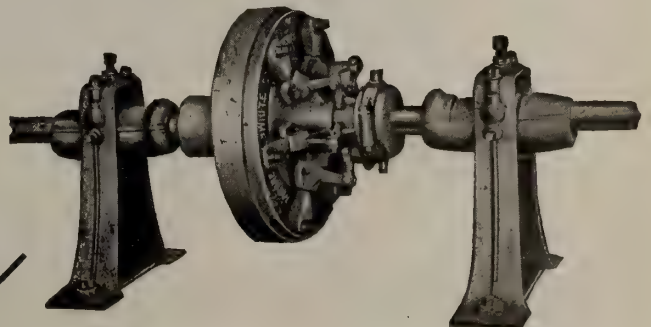
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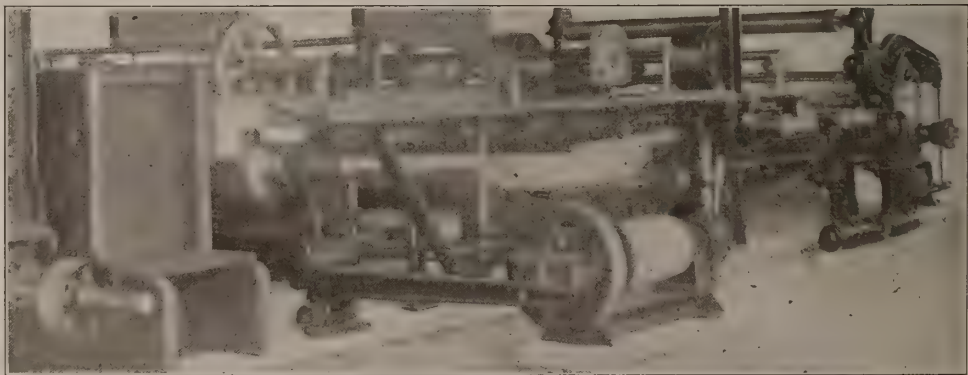
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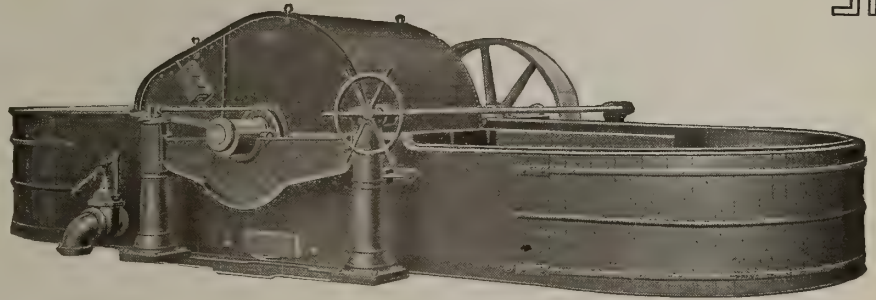
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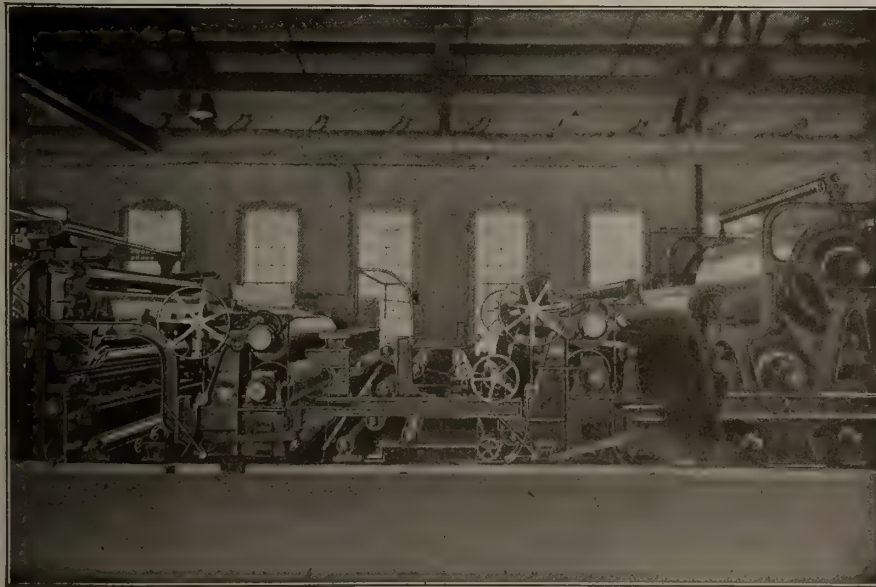
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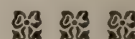
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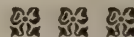
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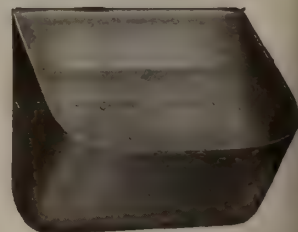
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MONTREAL, JULY 15, 1916

No. 14

The Eastern Rates Case

The judgment in the Eastern Rates Case made public on July 6th, created considerable surprise to shippers generally, although it was probably anticipated by the applicants, who, we understand, have been in close touch with the Board on the proposition subsequent to the public hearings.

The case opened March 1st, 1915, and closed (ostensibly) for taking evidence, June 30th, 1915, with the exception that the Canadian Press Association was granted a special hearing on January 18, 1916. Subsequent to the public hearings the question of railway finances was given a great deal of attention at the last session of Parliament, which resulted in the Government making further loans of \$15,000,000 to the Canadian Northern, and \$8,000,000 to the Grand Trunk Pacific. The Government also decided to appoint a special commission of experts to investigate and report on the general railway situation in Canada, the sum of \$150,000 being voted for this purpose.

In view of the action of the Government and the length of time that has elapsed since the public evidence was heard, interested shippers naturally assumed that the Board had decided to either leave the case in abeyance pending the report of the Government Commission, or to reject the application entirely. The question naturally arises as to the object of the Government in appointing a special commission when the Board of Railway Commissioners have apparently decided that the solution of existing difficulties is to tax the freight-commerce of Eastern Canada.

The judgment is predicated almost wholly on the requirements and necessities of the Grand Trunk Railway. It is admitted that one of the principal causes of

the financial difficulties of the Grand Trunk is the extent to which it is involved with the Grand Trunk Pacific. If this situation is to be met by imposing a tax on the shipping public of Eastern Canada, why does the Government consider it necessary to contribute an additional \$8,000,000 from the public treasury to the Grand Trunk Pacific?

One of the arguments of the Grand Trunk is that it has cost that road some three million dollars in complying with the orders of the Board in matters affecting safety and protection. The orders of the Board referred to simply make it legally compulsory to a large extent to do what any well conducted road would do voluntarily. No effort has been made to show what proportion of this expenditure has actually been forced by orders of the Board. The Grand Trunk and subsidiary companies operate extensively in the United States, having lines in no less than seven States, all of which are subject to the jurisdiction of the Interstate Commerce Commission, and a number of the States have State Commissions. In the most of the American territory through which the Grand Trunk operates a much lower basis of rates maintain, yielding substantially lower net revenue than the lines in Canada earn. No doubt it has cost the Grand Trunk large sums in complying with orders and regulations of the various commissions having jurisdiction in American territory through which Grand Trunk Lines operate. To what extent is the raise in Canadian rates intended to make up this expense?

There is a widespread impression that there is not as much efficiency in the management of the Grand Trunk as there should be. We do not think that any one familiar with railroad operation will contend that it is comparable with the Canadian Pacific in this respect.

It is no reflection on the Commission to suggest that owing to its limited organization, it has not the requisite machinery to thoroughly and consistently analyze and verify the unsupported statements of the railroads which are very susceptible to manipulation. The Interstate Commerce Commission has available an army of trained experts covering all departments of railroad-ing, which enables the Commission to get the actual facts independent of representations which may be made by the Carriers. The public had a right to assume that it was largely owing to this condition that the Government decided on a special Commission at a large expense to the country. We understand that representatives of the Carriers were working on the case at Ottawa for months after it was closed for public hearings. We may well question the propriety of the Board accepting additional evidence or assistance from the Carriers without at least according the other side the same privilege.

A brief review of the decision gives the impression that the Commission has been actuated by a desire to help the Government out of a dilemma, but the method adopted is to a large extent illogical and unfair to shippers in Eastern Canada. The Grand Trunk estimate of increased earnings, based on the application as a whole was \$1,076,000. The judgment grants increases averaging well over five per cent on the great bulk of tonnage handled, and the gain in revenue will no doubt greatly exceed the estimate. The Board, of course, could not grant an increase to the Grand Trunk alone, all other lines benefitting proportionately. The total additional amount shippers will have to pay being several times that required or asked for by the Grand Trunk.

The point was raised during the hearings that the proceedings were irregular, it being claimed that the Act creating the Board of Railway Commissioners does not give it legislative powers regarding freight rates, but restricts it to regulative powers; as to the reasonableness of rates that are compiled and submitted by the carriers in such manner as prescribed in the Act.

Pulp and paper manufacturers generally were not apprehensive of the result even with a decision favorable to the railroads, as the evidence clearly demonstrated that the prevailing rates on these commodities are unreasonably high when measured by customary standards. The judgment does not indicate that any consideration has been given to the question of comparative reasonableness of rates, ignores every argument favorable to the shippers' contentions, and has emphasized any argument which would tend to justify an increase in rates, irrespective of its merits.

The decision is disappointing and decidedly unsatisfactory to the pulp and paper manufacturers, and we do not think it will be allowed to stand unchallenged.

The Movies in Business

Everybody nowadays goes to the "movies," and before very long they will become a permanent factor in our educational system, in our industrial and commercial activities, and in all branches of science. Already the movies are being used in connection with surgical operations, so that students who "skip" lectures and clinics and absolutely refuse to burn the midnight oil can learn all about the appendix and other parts of the human anatomy at attending a movie at the corner. The price even is a factor in favor of the student; nearly every student being able to take himself and his best girl to a five cent show.

In the United States the lumbermen of the country are making use of the movies to educate the people in regard to the extent of the lumbering industry. The public have a sort of notion that certain heavy-jowled, large waisted capitalists walk into the woods, cut down the trees, and by some mysterious process turn the trees into lumber and pocket a few millions in the process. The lumbermen are anxious to show the public that there is a lot of hard work in connection with the lumbering industry, and that it entails the investment of huge sums of money for machinery, equipment, wages, etc., and that in brief, the whole process of turning trees into houses and parlor car fittings is an intricate and expensive process.

Here's a chance for the pulp and paper man to utilize a popular movement. Possibly less is known about pulp and paper making than almost any other industry in the country. It would be a revelation to the business man and an education to the youth of the land, were they to see pictures of the various paper making processes. Such a movement would make the public realize more clearly the importance of our forests, the extent and value of our paper making industry, and in many other ways, render a service.

We commend it to the powers that be for careful consideration. Somewhere in Holy Writ it says that "we are not to despise the day of small things." The movies are small in a way, but they have developed into a great institution, and if we can use them to the advantage of our business, let us by all means do so.

"Save it," the United States Government says. "Save all the old paper and rags that may be used as material for the making of paper," is the advice given by the United States Government. The letter then points out that something like fifteen thousand tons of different kinds of paper and paper board are manufactured every day in the United States, and a large proportion of this, after it has served its purpose, could be used over again in some class of paper. A large part of it, however, is either burned or otherwise wasted. This, of course, has to be replaced with new materials. In the early history of the paper industry publicity was given to the importance of saving rags. It is of scarcely less importance now.

TECHNICAL SECTION HOLDS GATHERING

GUESTS OF PAPER MAKERS OF NIAGARA PENINSULA

The summer session of the Technical Section of the Canadian Pulp and Paper Association, held in the Niagara Peninsula the last two days of June will go down into history as "red letter" days of the industry. Undoubtedly there are more pulp and paper mills in the Niagara Peninsula than in any similar area in the Dominion. Under the auspices of very a representative and attentive entertainment committee, technical men from all parts of the Dominion, not only visited the dozen mills engaged in various kinds of paper making, but held business meetings, and at the same time, had a round of social garieties which left a most favorable impression on all those participating.

The Technical Section were the guests of the following pulp and paper companies:

Foley-Rieger Pulp and Paper Company.
 Thorold Paper Company.
 Interlake Tissue Mills Co., Limited.
 Kinleith Paper Company, Limited.
 Ontario Paper Company, Limited.
 Beaver Board Company.
 Riordon Paper and Pulp Mills.
 Lybster Paper Mills.
 Lincoln Paper Mills Company, Limited.
 Provincial Paper Mills Co., Limited.

The Committee under whom arrangement were made was under the able chairmanship of Mr. Dan Daverin, of the Provincial Paper Mills. The balance of the Committee were:—Mr. W. Anderson, Secretary-Treasurer, and Messrs. T. A. Wedon, J. Herb, P. Byrne, J. Wilson, E. J. Foley, J. Ryan, and T. H. Nevell.

The party crossed from Toronto to Port Dalhousie by boat as the guests of the Committee. On arriving at Port Dalhousie they were met by trolley and taken in a special car to St. Catharines, where they visited the Kinleith Paper Mill, and from there to Thorold, where they were the guests of Mayor Battle and the Industrial Commissioner, later visiting the Thorold Mills and going to Niagara Falls for the night, where a banquet was held at the Clifton House, followed by a business meeting.

Friday was taken by with a visit to the Cliff Pulp and Paper Mill at Niagara Falls, N.Y., and various paper mills at Merritton, after which the party returned to Toronto by boat.

The complete program follows:

JUNE 29th.

8.00 a.m.—Leave Toronto for Port Dalhousie.
 10.30 a.m.—Arrive at Port Dalhousie, and take car for Kinleith Paper Mills.
 12.00 noon.—Take car to Thorold, going to Carnegie Library. Welcome speeches by Mayor Battle and others.
 1.00 p.m.—Lunch at City Hotel and Summit House.
 2.00 p.m.—Go by automobile to Ontario Paper Mill and Beaver Board Mill. Auto. back to hotels at Thorold.
 5.30 p.m.—Leave Hotels and take car to Clifton Hotel, Niagara Falls, Ontario. Members will register and get their rooms on arrival there.
 7.30 p.m.—Dinner at Clifton Hotel, Meeting of the

Technical Section at the Hotel after dinner.

JUNE 30th.

9.00 a.m.—Breakfast at Clifton Hotel.
 10.00 a.m.—Walk to Cliff Paper Mills, Niagara Falls, N.Y., U.S.A.
 12.00 noon.—Lunch at Clifton Hotel.
 1.00 p.m.—Take car to Thorold.
 2.00 p.m.—Visit Montrose Division, Provincial Paper Mills Co., Ltd.
 3.00 p.m.—Visit Interlake Tissue Mills, Merritton.
 4.00 p.m.—Visit Riordon Pulp & Paper Co., Limited, Merritton, the Lybster Paper Mills and Lincoln Paper Mills Co., Limited, Merritton.



DR. J. S. BATES,
 Chairman Technical Section.

6.15 p.m.—Members may leave Merritton by electric car for Niagara Falls or Port Dalhousie.
 7.00 p.m.—Boat leaves Port Dalhousie for Toronto.
 9.30 p.m.—Boat arrives in Toronto.

The business meeting held at the Clifton House, Niagara Falls was replete with valuable suggestions regarding a closer co-operation of the Technical Section with the mills who are engaged in the practical manufacture of pulp and paper. The meeting was presided over by Dr. J. S. Bates, Chairman of the Section, who, in his address, made a lot of valuable suggestions in regard to improving the work of the Committee. The

following are the chief suggestions made by Dr. Bates:

1) That the annual dues of members of the Technical Section be increased from the present figure to \$10.00 per annum, which however would include an annual subscription to the Pulp and Paper Magazine, the official organ of the Section.

2. The necessity of securing a special Government grant from the Dominion Parliament to enable the Association to carry on a more effective work, in the same way as the Government has given a grant to the Mining Institute and other scientific organizations con-

8. A closer co-operation of the Technical Section with the pulp and paper men in the United States.

9. That mill tests should be carried on simultaneously with experiments conducted at the Forest Products Laboratory in Montreal.

Following Chairman Bates' suggestions it was moved by Mr. Thorne, seconded by Mr. A. G. McIntyre and carried, that the Council of the Technical Section appoint an Advisory Committee to consult with the present Board and in so far as possible, this new Committee should be representative of the different grades of paper manufactured in the country.



GROUP OF TECHNICAL MEN AT NIAGARA FALLS.

(Photo by T. Linsey Crossley).

nected with the basic industries of the country.

3. That with the extra funds, the Technical Section should get a paid secretary of their own or combine the work of such secretary with the Editorship of the Pulp and Paper Magazine. If possible, to combine the two fields under a technically trained man.

4. That the present members immediately commence a canvass among their mill associates and friends, for the purpose of securing new members, especially technical trained men.



KINLEITH PAPER COMPANY AT ST. CATHARINES.

REPORT OF COMMITTEE ON TECHNICAL EDUCATION.

Following the line of action outlined in the recommendations made at the February meeting, and endorsed in principle by the section, your Committee sent out a circular letter to eighty men in Canadian mills. This letter restated the recommendations in our last report and asked for comment. Whilst we have not had many replies, we are pleased to report that the replies received, show a hearty concurrence in the proposals and in the case of four mills, a start is to be made at once



OLD WELLAND CANAL. MONTROSE MILLS OF ST. LAWRENCE PAPER CO.



BEAVER WOOD-FIBRE CO. ONTARIO PAPER CO. IN BACKGROUND.

5. The advisability of changing the name from the present somewhat lengthy and cumbrous title to a shorter and more comprehensive one.

6. Possibilities of further visits to mills, the general desire being that one such gathering as the present should be held each year, while another be held in October in Montreal, at which technical papers should be read.

7. That steps should be taken to secure the appointment of a Special Paper committee to act as an Advisory Board to the present Technical Committee.

along the lines of our first recommendation namely: that a room be set apart for the men, equipped with sufficient material in the way of books, paper, etc., to assist them to keep in touch with the progress of the industry as a whole and to study or make note of problems in their own departments. It is pointed out that with the three shift day, many men are found at the mill in advance of their time. Such a room would be open to these men. It must be repeated however, that there is little to expect of this institution unless it is in the hands of an interested technical man. As soon

as one or more of these rooms are in operation, a Queries or Correspondence column should be opened in the *Pulp and Paper Magazine*, so that mills and men may co-operate.

One mill now refuses to employ men who cannot read and write, we believe that the premium so put on primary education would be a stimulus to a higher literacy among workmen.

We must keep before us as our ultimate goal, the establishment of one or more schools for Paper-making in Canada. These schools should be in a pulp and paper centre and should be entirely controlled by the pulp and paper industry.



UNLOADING WOOD FOR THE ONTARIO PAPER COMPANY AT THOROLD.

Any mills deciding to take up the technical room idea would help much by advising this Committee and would put us in a position to help them.

We have to thank Mr. A. G. Pounsford of the Ontario Paper Makers' Safety Association for his offer of co-operation. The movement for safety in mills is largely a matter of education. Mr. A. G. Pounsford has kindly consented to act on our committee.

Respectfully submitted,
Committee on Technical Education,
(Signed) T. Linsey Crossley,
Chairman.

Report of Committee on Standards.

(J. A. DeCew, Chairman)

To Dr. John S. Bates,
Chairman of Section,
Montreal, Qué.

Your Committee on Standards have been considering the matter of standardizing various materials used

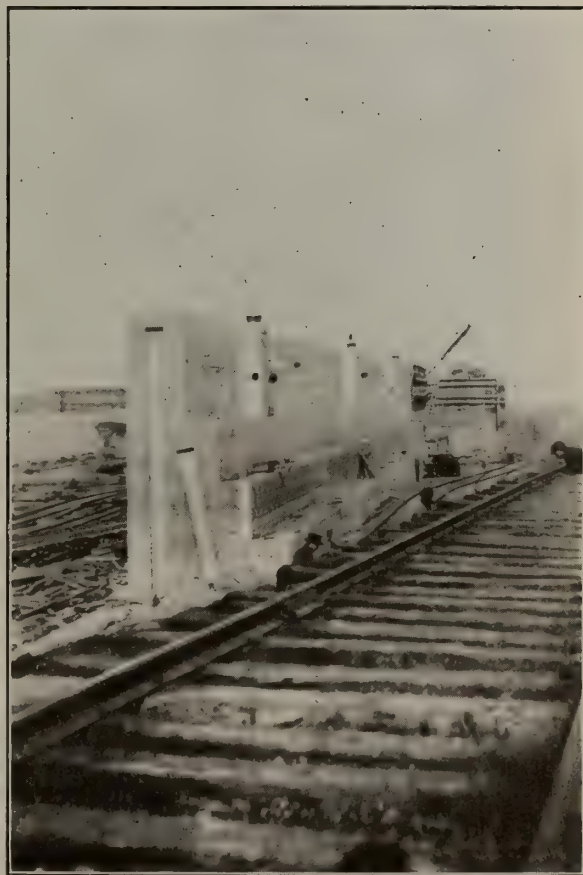
in pulp and paper industry, but up to the present time discussions on this question have assumed only a preliminary character. It seems evident that a considerable amount of work will require to be done before any definite proposals can be submitted in this connection.

In the matter of adopting standard methods of analysis used in the examination of pulp and paper materials, this seems to be one of our first considerations, especially since the various Committees on Standards of the American Pulp & Paper Association have already submitted some methods which they have tentatively adopted.

It is the desire of your Committee to adopt the methods of analysis which will conform as nearly as possible to those adopted as standards in the U. S.

Analytical methods used in the testing of "Bleaching Powder, Salt, Lime and Lime Stone, Sulphur and Sulphate of Alumina" are already fairly well standardized and the methods recommended by us for your adoption are practically identical to those chosen by the members of the Committee of the U. S. Technical Association.

With regard to the analytical methods used in the control of sulphate pulp process, we recommend similar



VIEW OF CONCRETE LOCK WALL ON NEW WELLAND CANAL.

methods to those outlined in an article by Otto Kress, Ph.D. published in this year's Convention Number of "PAPER".

These methods have been approved by all the manufacturers of sulphate pulp in Canada and may be safely recognized as a basis for standardizing the chemical tests in this industry.

With reference to the methods of analysis covering rosin and rosin size, your Committee feel that Canadian conditions may be somewhat distinctive in this connection and they are submitting special methods of analysis which will be ready for publication very shortly.

Your Committee will be glad to co-operate with anyone desiring to assist in checking or revising of these methods as it is only by critical examination that satisfactory standards will eventually be obtained.

Yours truly,

J. A. DeCEW,

Chairman of Committee on Standards of
Technical Section.

ing the publications rights at 15 cents per column inch would be equivalent, so far as cost is concerned to co-operation. As soon as these facts were obtained your committee got in touch with our official organ the *Pulp and Paper Magazine of Canada* with the result that this magazine has arranged with the Committee on Literature of the Technical Section of the Pulp and Paper Industry to buy the publication rights as soon as the abstracting is started.

This apparently takes the matter out of the hands of your Committee and closes up their work so far as abstracting literature is concerned.

O. F. BRYANT.



INTERIOR ONTARIO PAPER MILL, THOROLD, ONT.

REPORT OF COMMITTEE ON LITERATURE AND STATISTICS.

June 29, 1916.

Your committee has continued its work of arranging for the abstracting of technical literature of interest to the pulp and paper industry. In this connection we have been in touch with the Committee of Literature of the Technical Section of the Pulp and Paper Industry with a view to co-operation. It seemed to be the feeling of the latter committee that for the present at least they would prefer to handle the abstracting alone as they consider that co-operating with another association would complicate matters. They intend to abstract the literature and print the abstracts in their official organ *Paper* and they are willing to sell the publication rights to other magazines for 15 cents per column inch. It seems that the cost of abstracting amounts to about 30 cents per column inch so that buy-

The Results.

The results of the conference held during the two days and of the many informal talks between members, was the placing of greater emphasis on the need of technically trained workmen, the importance of the "safety-first" movement, the establishment of a pulp and paper school in connection with one or more of our universities, the advisability of having a room set aside in every pulp and paper mill for the use of the men who wish to consult technical journals, and the growing importance of the scientific or technical side of the work. The necessity of more and a wider-spread technical education system as well as ways and means of bringing about that greatly desired goal were discussed by the members. The meeting was replete with interesting discussions, while many valuable suggestions regarding mill management, and the extent and variety of the pulp and paper products produced in the Niagara Peninsula were secured by the visitors.

They were especially impressed with the up-to-date nature of the machinery used and in the mills and the 'men behind' producing the goods.

Paper Mills in Niagara Peninsula.

The importance of the Niagara Peninsula as a pulp and paper manufacturing centre is well shown by the fact that at the present time there are thirteen mills in the district with a total capacity of 429 tons. This is divided into

Bag, bond and writing.....	41 tons.
Tissue	12 tons.
Kraft, manilla and wrapping.....	25 tons.
News	120 tons.
Wood fibre	60 tons.
Ground wood	141 tons.
Sulphite	30 tons.

The advantages of locating on the Welland Canal are many and obvious. A uniform supply of water which remains constant throughout the year, unlimited power, excellent shipping facilities and nearness to markets are

installing a third machine. The Provincial Paper Mills Company at Thorold is the largest book paper mill in Canada and is also a big producer of bond, writing and ledger paper. The Beaver Mill at Thorold cost \$800,000. It contains a board machine 300 feet long, the only one of this kind in the world. The Riordan Company at Merritton are building an addition to their plant at the cost of \$300,000. All the other mills in the district are operating to capacity while a number of them are considering the advisability of enlarging their present facilities.

THE BANQUET.

No more romantic or picturesque spot exists on the Continent than Niagara Falls. It is the Mecca to which bridal couples and tourists flock by the thousands, and here also came the Pulp and Paper Men. For a banquet the Clifton House dining room was an ideal place. There within sight and sound of the Falls, the dele-



BEAVER BOARD FACTORY, THOROLD, ONT.

some of the many reasons which lead pulp and paper makers to locate in this district.

When the new Welland Canal is completed it will make the towns along that waterway virtually ocean ports. The new canal will be 25 miles in length by 200 feet wide at the bottom and 30 feet deep. The difference between the level of Lake Erie and Lake Ontario amounting to 325½ feet will be overcome by seven locks, each having a lift of 46½ feet, this being the greatest lift yet attempted in canal building. At one point three twin locks will be built to overcome a difference of 135½ feet. One flight of these locks will be used for down bound vessels and the adjoining flight for up bound, thus overcoming the delays such as take place in ordinary canals.

It is not necessary here to go into a detailed description of all the mills located in the Niagara district, but a few comments regarding two or three mills will prove of interest. The Ontario paper mill at Thorold, built at a cost of a million dollars, uses 10,000 electric horse power, secured from Niagara Falls. The mill contains two 200 inch paper machines, these being the largest paper machines in the world. The Company is

gates partook of the good things provided and soon grew into a frame of mind in keeping with their surroundings. It would be hard to imagine anything more beautiful than the electric flash lights playing on the Falls. It is no wonder that every one present voted the gathering the "best ever."

Mr. Dan Daverin, Chairman of the Committee acted as toastmaster and performed his duties in his usual happy style. After the toast to The King was enthusiastically drunk he called upon Mr. T. A. Weldon to propose a toast to "The Visitors". Mr. Weldon expressed his pleasure at having the Technical Section visit the Niagara District and hoped that the present visit would prove the forerunner of others.

In responding to the toast Dr. J. S. Bates the Chairman of the Technical Section acknowledged the many courtesies extended by the paper makers of the District and told of the profitable time spent by the members of the Section.

Chairman Daverin then called upon Mr. W. G. MacNaughton, Vice-chairman of the American Technical Association of the Pulp and Paper Industry who told of the impressions made upon him by the marked ex-

pansion of the industry in Canada. He also expressed his appreciation of the efforts made by the paper makers of Niagara District to give the visitors a pleasant and profitable time.

Mr. C. B. Thorne responded to the toast "Our Friends Across The Line" and in a graceful speech referred to the work performed by the American Technical Section and urged that a closer working arrangement be aimed at between the Canadian and American sections.

The Guests.

The list of those in attendance at the banquet and meeting of the Technical Section of the Canadian Pulp and Paper Association follows:

Dr. and Mrs. John S. Bates, Prof. and Mrs. H. O. Keay, Mr. and Mrs. A. G. Pounsford, Mr. and Mrs. T. L. Crossley, Dan Daverin, T. A. Weldon, Ed. P. Foley, James F. Wilson, Thomas J. Keenan, H. S. Taylor, W. G. McNaughton, Logan M. Waterous, A. G. McIntyre, J. A. De Cew, F. H. Keefer, A. S. Hinzle, Charles W. Burroughs, E. B. Stark, T. R. H. Murphy, J. F. Ryan, T. H. Nevill, W. A. Anderson, Joseph A. Fuchs, E. R. Low, R. C. Lowary, B. Wilson Sidwell, jr., O. F. Bryant, W. S. Ketchen, G. W. Dickson, C. B. Thorne, J. J. Herb, F. M. H. Cushing, P. Byrne, T. J. Murer, V. A. Straud, S. Wang, J. B. Piper, Burcham Hart, A. O. Bowness, L. N. Shipman, C. F. Buss, F. W. Rahmanop, jr.

MENU

Canadian Pulp and Paper Association

TECHNICAL SECTION

Dinner

Little Neck Clams

Chicken Gumbo

Celery Mixed Olives

Lobster au Gratin, Cardinal

Escalopes of Sweetbreads, Colbert

Broiled Spring Chicken

Potatoes Parisienne New String Beans Santé

Grape Fruit and Lettuce Salad

New Niagara Asparagus, Sauce Hollandaise

Biscuit Tortoni

Demi Tasse

Thursday, June 29th, 1916.

CONVENTION CHAFF.

Mine host Daverin!

The ladies added the finishing touch.

Mr. T. A. Weldon was the youngest man in the party.

"Between Decks, or Aft"—a series of short stories by Piper, Hart & DeCew promises to have a great sale.

And yet they say that an Englishman has no sense of humor! The man who said that never met Hart.

Safety First Pays. If you don't believe it ask Pounsford the price of tobacco across the Border.

Chairman Bates was kept busy explaining that he wasn't on his honeymoon—it took some explaining too.

Those Buffalo Board Boys are alright even if they did exceed the speed limit going into the Falls.

The Niagara Peninsula paper-men certainly have developed the Fraternal spirit and furnish a good example to mill men in other parts of the country.

Barries famous story "When a Man's Single" promises to have a rival in DeCew's "When a Man's Happiest". Its some story.

Charlie Buss says he will invite the Technical Section to hold their next meeting at Mille Roche provided Piper, DeCew and Hart promise to come.

Editor Keenen of Paper was the official photographer of the party. He specialized on bridal couples—and was kept busy.

"Caught With the Goods" or "Made to Disgorge at the Gorge" is the title of a new movie scenario with Dickson in the title roll and Daverin and the Customs officer as the Villians. No smoking!

After all is said and done it was a pretty mean trick of "Dan" & "T. A." to switch the Special Car around by a side street and leave Anderson high and "dry" on a corner waiting for the last call, especially when Sept. 16th is getting so near.

McNaughton of Port Edwards Wisconsin is still a loyal Canuck although he has been for several years sout hof the Line. He says that another banquet like the one at the Clifton House would send him to the brink of the Falls.

A century ago Wellington prayed for night or Blucher. On the way into Niagara Falls Crossley hoped and prayed that Henry Ford had made a good job of bolting and rivetting a certain Jitney turned out with the days batch.

Bryant on the Maid of the Mist as the party downed their hoods. "Say if some of those bridegrooms saw their brides with those things on before popping the great question it would have been a case of "No Wedding Bells For Her". Bryant by the way was considerably worried over the number of June brides at the Falls.

Dan Daverin is a host in himself but when he was backed up by such men as T. A. Weldon, W. Ander-

son, E. J. Foley, P. Byrne and the others he had a combination that's hard to beat.

"Ike" Weldon has a loyal bunch of sales men and a mighty efficient aggregation they are too. Weldon knows how to get team-work out of his men almost better than any man in the business.

Talk about the flag that "braved the Battle and the breeze"—for a thousand years. Well up in Thorold they have a couple of Battles who are putting that town on the map in proper style. Mayor Battle and his brother the Industrial Commissioner are two wide-awake men, both doing most effective work. An able assistant is F. H. Keefer, K. C., a well-known writer on historical subjects. His book on Beaver Dams is a classic.

"Every Rose has a Thorne" but not every paper company is so blessed. As far as known Riordan's have the only one in existence but he is a real live one and is doing most effective work at the company's mill at Merritton where he is spending \$300,000 in improvements. The writer cannot understand how Thorne & Daverin managed to get away with that ten course dinner and then repeat with the rest of us.

If young Waterous doesn't put some of those German machinery firms out of business the writer will miss his guess. He is making a good line of pulp machinery and at the same time is wide awake and eager to get onto new wrinkles.

The Canadians in the party greatly enjoyed the visit to the Cliff Paper Mills at Niagara Falls, N.Y. The management were unsparing in their attentions and hospitality as indeed were all the heads of the mills visited.

McIntyre's Mysterious Movements excited the wonder of his associates. He left Niagara Falls early Friday morning and was not seen by anyone all day. At night he appeared in the Bread Line or the long cue at the Union Station Toronto and in a stage whisper to the ticket seller asked for a Bit of Cardboard for "Somewhere in the Country."

UNION BAG AND PAPER CO.

At a meeting of the directors of the Union Bag & Paper Co. held recently in New York, August Heckscher was elected chairman of the board. Charles R. McMillen and E. B. Murray, vice-presidents of the company, were elected members of the executive committee. No definite action was taken with reference to filling the office of president, made vacant by the death of John S. Riegel.

PAPER SCARCITY.

North of England newspaper publishers have increased prices from a halfpenny to a penny, owing to the scarcity and high cost of paper,



Mine Host Daverin.

Mr. Dan Daverin, Chairman of the Entertainment Committee, gave the visiting delegates a royal time. He could easily make his living as a host if he were to give up his position as a paper maker. However, this is not likely to be brought about, as he is regarded as one of the best paper makers in the business.

Like so many of our good men, Daverin was secured from across the Line. For some twelve years he was assistant superintendent at Stephen's Point, Wis., then for a half dozen years was with the Bryant Paper Company, of Kalamazoo, but for the past four years has been superintendent of the Provincial Paper Mills at Thorold.

Mr. Daverin is one of the many able and efficient men Mr. I. H. Weldon, President of the Provincial Paper Mills has gathered about him and has been no small factor in the building up of the big business of the Company during the past few years.

Much of the success of the recent gathering at Niagara was due to "Dan's" untiring efforts.

GUMMED PAPERS EXTENDING.

A new addition is being built to the plant of Gummed Papers, Limited, of Brampton, Ont. New machinery has been installed for the printing of all kinds of gummed tape and gummed labels. A machine has also been put in for making waterproof case lining and cloth lined papers.

AMERICAN TECHNICAL MEN TO MEET.

The American Chemical Society, and the Technical Association of the Pulp and Paper Industry will meet in New York from September 25 to 30th. An elaborate program has been prepared which it is believed will attract over 3,000 delegates.

The Location, Organization and Economical Operation of the Modern Box Board Mill

By HENRY BERT.

(Special to Pulp and Paper Magazine).

The location of our manufacturing plant is a matter which must be approached only after the most careful consideration of the several possibilities by which the operation of the plant may be advantaged or disadvantaged and which are prime factors in determining the measure of success or otherwise which the balance sheet will show at the expiration of any given period of operation.

The selection of a location for a modern box board mill requires greater care and more careful attention to natural conditions than perhaps many other manufacturing plants of a different nature, owing to the action of the different natural elements upon the equipment used in the manufacture of box board, and the finished article produced.

The consistent and profitable operation of a modern box board mill depends almost entirely upon the location offering the following advantages:—

FIRST—The site chosen should be located upon some stream which could be depended upon to furnish an unlimited and as far as possible consistent supply of water under any and all conditions during the year.

SECOND—To be in proximity to a dependable market from which to draw the requirements of raw material.

THIRD—The railroad facilities should offer an economical accumulation of raw material and a favorable distribution of the finished product.

FOURTH—Should be near a favorable market for the supply of suitable fuel for steam purposes.

Of these four conditions, the one of greatest importance is, perhaps, the water supply. This is of primary significance in case it is the intention to utilize the water power as far as is possible in the operation of the plant, and of secondary importance as regards the chemical composition of the water, which will determine the action of the water in the boilers and upon such other equipment as pumps, felts, filters and piping. It would be better economy to operate under favorable water conditions and against an unfavorable freight rate, as the repairs and inconveniences suffered by reason of a poor water supply, would be many and very expensive. Several analytical tests of the water should be made at different times of the year if possible, to determine whether or not unfavorable conditions existed.

The water should be free from lime to show economy in the boiler room, as lime is the cause of the formation of all scale and the presence of lime in the water means a continual up-hill fight to prevent scale, the formation of which lessens the efficiency of the boilers and brings about a larger fuel consumption.

Sulphur water cannot be used in the boilers as it causes so much foaming, making uncertain the amount of water in the boilers which may result in serious disaster to the boilers by reason of burned crown sheets, or possibly an explosion.

The sulphur in the water will also attack the cylinder wires causing them to rot off in about one third of their ordinary life.

The water should be free from iron as this causes the felts to become hardened and it is therefore impossible to get either the best results from the felts or a satisfactory finish to the board.

Box board mills using well water will also have serious trouble by reason of boiler scale and foaming. The felts will also become hardened and necessitates their removal when but half worn out.

Perhaps the best way to secure a water supply that would be adapted to meet conditions, would be to choose a location upon a stream having a good growth of trees or bushes upon the banks and having a bed that is a trifle muddy. Water from such a stream will contain enough vegetable matter to prevent the formation of scale in the boilers and has a further tendency to keep the felts soft. It is therefore not advisable to purify river water as this process removes the vegetable matter, the presence of which is desirable, as large settling tanks are used with excellent results, the mud and dirt settling to the bottom and the water is then drawn off as desired.

After the site has been selected and the grades of box board to be made determined upon, the services of a Superintendent experienced in the manufacture of the proposed grades should be secured and a high class, and thoroughly competent box board mill Engineer engaged. These two men should work very closely together and very carefully go over the proposition. No detail should be so small as to receive no attention. The practical experience and knowledge of the Superintendent and the technical training of the Engineer will work out many perplexing problems to a solution very close indeed to the actual situation as it will be developed later.

The different grades of box board and the approximate tonnage of output having been decided upon, the problem then confronting the Superintendent and the Engineer is to decide upon the machinery and equipment necessary to be assembled as a well balanced and equally proportioned unit of manufacture. It should be particularly attended to that each department of the plant is of such specifications as will permit the uninterrupted operation of the plant or unit, that there may be no loss of time by reason of having to wait upon any department because of an inadequate installation of equipment.

It has frequently happened in the construction of new box board mills that the board machine would be able to produce say sixty tons of board per day, but the beater room will only prepare and furnish forty tons of stock. The engines would be suitable for a sixty ton production but the boiler room could only furnish steam enough for but forty tons. Such conditions are self evident that such a mill was not planned, constructed or equipped along practical and technical lines, but in a haphazard manner. These matters will be given attention at greater length in subsequent articles.

It is of the greatest importance that the Superintendent be constantly on the ground during the installation

and erection of the machinery and other equipment and be in close touch with everything pertaining to this feature in all the various departments. He will then know the location of every piece of machinery even to its smallest part and be able to determine whether or not the machinery and equipment conform to the specifications of the contracts.

The position of the General Manager is one that should be filled by a man familiar with the business and having a good general idea of the manufacture of box board and the conversion costs of the different grades of board, as well as a knowledge of the different materials used in the furnish of the different grades of board. Such a man will be familiar with market conditions both as regards the buying of raw materials, machinery and repair items and also as regards the selling of the finished product.

We will assume that we have secured our location, perfected our organization and are now prepared to proceed with the erection of a modern fifty ton box board mill. The next article will be devoted to the methods of buying and placing the necessary machinery and any equipment for a properly balanced unit of that capacity.

PAPER INDUSTRY IN FRANCE.

The paper industry, an important one in the district of Grenoble, France, faces a critical condition, according to this week's Consular Reports. The manufacturers before the war imported large quantities of pulp from Germany and the Scandinavian countries, but lately have had to depend entirely upon supplies from Switzerland.

At the beginning of 1915, the Pulp factory of Attisholz, Switzerland, the principal furnisher of this section, notified its French patrons that on account of measures taken by the French Government prohibiting the exportation of iron pyrites it would be compelled to close down within sixty days. This factory obtained monthly from France 288 metric tons of pyrites which it employed in the manufacture of 900 metric tons of wood pulp. Immediate steps were taken by which a limited exportation to Switzerland to pyrites from St. Bel, France, might be allowed. About February 1, 1915, an arrangement was allowed whereby it was permitted to export monthly into Switzerland an amount of pyrites not in excess of 288 metric tons, upon condition that the factories receiving it should introduce into France 315 tons of pulp for every 100 tons of pyrites exported, but this agreement was not put into operation until the middle of March.

ABITIBI LAND AND FORESTS COMPANY'S BONDS.

An offering of \$57,000 7 per cent. 5-year bonds of the Abitibi Lands and Forests, Limited, is being made by Messrs. Peabody, Houghteling and Company, Chicago. The bonds are secured by first mortgage on 40 lots and residences, etc., at Iroquois Falls, Ont. The principal and interests are a direct obligation of the Abitibi Lands and Forests, Limited, which owns the townsite of Iroquois Falls, and 5,000 acres of land surrounding it. Payment of principal and interest is guaranteed by the Abitibi Power and Paper Company, Limited.

CANADA'S CHEMICAL PULP.

What Canada has achieved in the manufacture of ground wood-pulp will be assuredly accomplished with like success in the manufacture of chemical wood-pulp, sulphite and sulphate, and in this expansion of her enterprise may learn from the example and the experience of the United States which, in the early nineties, could not produce chemical wood-pulp to compete with Scandinavian pulps. They were poor in quality, dirty, and altogether unsatisfactory, but continuous study and application in the course of a few years put the United States on a very different footing. Chemists and technists persevered until to-day the United States is able to produce about 1,250,000 tons of sulphite and 425,000 tons of sulphate wood-pulp. Canada, too, has gone ahead, and will continue to expand the sulphite and sulphate pulp industry. Canada possesses the right kind of wood, in quantity and quality, besides being rich in unrivalled transport facilities and splendid advantages in regard to sites.

This makes it perfectly clear that Canada can if given adequate support in respect to capital, place Great Britain in the position of being independent of foreign sources for its wood-pulp.—Trade Bulletin.

PAPER FAMINE IN EUROPE.

The paper famine in some parts of Europe is growing sharper. Consul Winans, at Nuremburg, in a despatch to the United States Bureau of Foreign and Domestic Commerce, says that the situation is so acute in Bavaria that the municipal authorities of various cities have adopted stringent ordinances against waste. In order to secure the conservation of paper, slates are being used in some places, and nowhere can paper be used for starting fires. Employees in all factories are required to pick up pieces of paper and keep them in sacks and turn them in at the end of every week.

City authorities require that all official orders shall be made as short as possible; that when half a sheet of paper is sufficient, the whole sheet shall not be used; that spacings, when the typewriter is used, shall be avoided, that newspaper notices shall be made brief. When it is necessary to re-publish old notices, these shall be shortened, if possible. Only as many copies shall be issued as are absolutely necessary. It is further recommended that notices of subordinate or momentary importance; stenographic dictations, etc., shall be written on waste paper in order to save good paper, or even that small slates shall be used.

LAURENTIDE POWER COMPANY.

Announcement is made that the Laurentide Power Company will shortly make an issue of \$3,500,000, five per cent bonds, due in 1946. The issue, it is understood will be made simultaneously here and in New York.

The bonds will be issued at 90.

It will be recalled that at the time this company made its last issue reference was made to the exceptionally low bonded debt, which was equivalent to 60. per horse power, which was said to be smallest bonded debt of any similar company.

AN EXPANDING INDUSTRY

CANADA'S PAPER PRODUCTION TO INCREASE 1,000 TONS.

For some months the Pulp and Paper Magazine has been informing its readers that the pulp and paper industry, on this continent and especially in Canada was on the eve of the biggest boom in its history. In a measure it is wrong to characterize the present activity and expansion taking place in the industry as a boom. It is rather the natural, healthy and legitimate expansion of an industry that is based upon sound economic conditions. Canada possesses the water power, the timber resources, the labour and shipping facilities and every other factor making for the economic manufacture of pulp and paper. It is only natural, therefore, that there should be a healthy expansion of the industry in the Dominion.

Doubtless this healthy expansion has been accelerated by the unsettled conditions arising out of the war. Supplies formerly secured in the world's markets from Germany, Norway, Sweden and other countries have been cut off, and buyers have turned to Canada and the United States to supply their needs. The result is that there has been a speeding up of the present mills in Canada to capacity, a large increase in our exports, and many plans made for the building of new mills and extensions to existing plants.

Some of the more important extensions now being planned in Canada are the following:—

1. Price Brothers and Company, Limited, have just sold five hundred thousand dollars of six per cent notes and will use the proceeds in completing extensions to their plant, so as to increase their output of sulphite, groundwood-pulp and news-print. The ground wood-pulp will be increased to fifty-five thousand tons a year, the sulphite pulp to twenty-five thousand tons, while the newsprint will be increased to sixty-two thousand tons, as a result of the extensions to be made in the company's plant. In the past three years Price Brothers Company have expanded three hundred and sixty thousand dollars on the Shipsaw Falls development. The issue of the notes will be a first mortgage on the power development of the Shipsaw Power Company. The additions of the pulp-making plant will be completed and the mills in operation by the first of October 1916, while the new paper unit will be in operation by the first of February 1917.

2. International Paper Company of New York announces that they have completed plans for a new two-hundred tons news-print mill, which will be erected somewhere in Canada. The mill will produce news-print, paper, ground woodpulp and sulphite pulp. The Company have not announced the exact location of their plant, but the very fact that the largest paper mill in the United States is coming to Canada, is highly significant.

It is probable that Batiscan will be chosen as the site.

3. Laurentide Company, Limited, is doubling the extension of its plant and will ultimately bring its production of news, up to four hundred tons daily. The power development, which is taking place by this Company, places it in an extremely favorable position, as they have now sufficient power, not only for their own future requirements, but a surplus for export,

4. The Union Bag and Paper Company is constructing a news-print mill at Three Rivers, with a capacity of one hundred tons per day.

5. The Belgo-Canadian Pulp and Paper Company recently installed a news machine, which was one of the largest in the country.

6. The Donnacona Paper Company Limited of Donnacona, Qué., is installing a new paper machine, which will increase its output by fifty tons per day.

7. The Ontario Paper Company, Limited, of Thorold, is installing a news machine of sixty tons capacity, which will be in operation by the first of November. This will bring the total output of news from this mill to approximately one hundred and eighty tons per day.

8. The Abitibi Power and Paper Company are making plans to double their power developments, and it is understood that as soon as it is complete, the capacity of their mill will be increased by the installation of two 235 inch paper machines, the largest in the world.

9. Ha Ha Baie Sulphite Company have completed plans for the installation of a sulphite mill at Bagotville, Que., and will probably build a newsprint mill in connection with the new plant.

10. The Riordon Pulp and Paper Company, Limited, at Merritton are expending three hundred thousand dollars on enlargements and improvements to their plants, and while at Hawkesbury, the same Company have just completed extensions which have brought production up from ninety to one hundred and eighty tons per day. The Company recently purchased the Foster Saw Mill at Haileybury, Ont.

These are the main improvements and extensions of plants by the paper makers in Canada, but by no means, constitute the whole program. In a letter received from a consulting engineer by the editor of the Pulp and Paper Magazine this week the following extract is significant:

"Prospective pulp and paper industries are like the sands of the sea and United States capital is simply tumbling our way. My slate is so full that I cannot handle half the calls that I get."

Canada is undoubtedly on the eve of a remarkable expansion of her Pulp and Paper industry.

TO WIDEN USE OF SISAL GRASS.

The Comission Reguladora del Mercade de Henequen, which was formed last year to handle the marketing of sisal grass for the growers in Yucatan, is making efforts to have the material used in various ways besides the manufacture of binder twine. In the offices of the commission one may see durable cloth, dyed in several colors, and even shoes made of sisal, or hemp. Dr. Victor A. Rendon, in charge of the work in the United States, says that the reason smaller prices are being paid the grower for Yucatan hemp than in recent years is that the selling price, also, may be kept down. In this way, he states, the use of Yucatan hemp will be widened in competition with Russian products and somewhat similar material from India.

The Paper Pulp of the Future

By PRESIDENT P. EBBINGHAUS, Copenhagen.

The constantly increasing shortage of pulp wood for paper pulp manufacture, combined with the enormous rise in pulp wood prices, which for a long time has been observed in the United States, in later years has also made itself felt in the Scandinavian paper countries, where, notwithstanding the vast forest dominions, great difficulties have to be overcome in getting sufficient wood pulp and cellulose wood. It should therefore seem necessary to look about for materials for paper production which partly could replace wood. The limiting and possibly ceasing altogether of the importation of foreign logs, resulting from the war, has still further impressed the thought of lumber shortage, adding more weight to the necessity to find new substitutes. The world-consumption of paper is increasing rapidly and steadily as development and culture are advancing, and with the thought of endless fields in Asia, America, Australia and Africa which so far are untouched by civilization, whose demand for paper at some future time will have to be filled, it must be plain to everybody that lumber alone will not suffice. The question then is where and how to find the future substitutes for lumber with which to make paper pulp. No doubt it will have to be straw, which therefore deserves most of our attention. Grasses, such as Esparto and wild hemp, of late so much in demand in America, among others, make much smaller claims on soil and climate than the pine tree does. Even if the experiments made so far with the different grasses, bushes and heath, hardly have yielded more than 20 to 30 per cent cellulose useful for paper, it must on the other hand be remembered that grass grows in one year, whereas a tree needs more than 20 years. No matter how much the enormous forcing of lumber prices is condemned, there is anyhow one good side to it inasmuch as it will accelerate the change from wood to straw. "Necessity teaches naked woman to spin."

It would be sufficient to point to the many fine kinds of paper made from different kinds of grass, but I should like, just the same, to accentuate that paper made from straw, etc., by far surpasses woodpulp papers in regard to the fineness of quality, and that it would make it feasible to replace paper of more than 24x36-31 to 37-500 sheets with paper weighing less than 24x36-18-500 sheets. The good results thin printing paper has been giving would certainly confirm that a reasonable lowering of the weight would bring about a considerable saving in material. And that would be effected by the proper use of straw and wood combined.

I reached that conclusion after having read in the *Papir-Journalen* about the starting of an experimental station in Norway. Considering the fact, so favorable to Norway, that it has the largest plants in the whole world for extracting nitrate from the air, it might be hoped for that it would extend its experiments beyond the wood also to the straw, thus opening new roads for supplying the paper industry with raw materials. A well known trade paper recently pointed out that, if forestry, and agricultural circles had been working with the same interest as those engaged in engineering and paper technique, nature would have yielded much more raw material for paper than the modern pulp industry requires. Even if this should be somewhat exaggerated, we may permit ourselves to recall a good

old German proverb, saying: "when the will is good and the courage strong, one arrives at last despite all doubts, at the goal set." (*Zuerst verach't man's, dann verlacht man's und dann macht man's*). "First despised, then ridiculed, at last accepted."—News-Print Manufacturing Association.

THE NEWSPAPER SITUATION.

On the whole, with every mill working at full capacity, there is apparently no accumulation of storage stocks and there is no probability that any increase in storage stocks will be noted during the next two months. As you all know from previous reports, storage stocks are below the danger points, and unless they are replenished during the next two months, there will unquestionably be great difficulties encountered in supplying the wants of customers during the months of greater demand in the fall, reports the News-Print Manufacturers' Association.

I have before me the reports of production and shipments for the week ended July 1st, in the western and Canadian sections. In the Canadian section production amounted to 105.1 per cent of maximum capacity, and shipments to 106.6 per cent. In the western section production amounted to 115 per cent of maximum capacity, and shipments to 118.3 per cent. In the Canadian section mill stocks decreased 120 tons during the week, and in the western section mill stocks decreased 115 tons during the week. In the Canadian section some mills were unable to make prompt shipments on account of shortage of cars; in the Canadian section also, on account of the Canadian national holiday on July 1st, the production was cut down to a considerable extent at most of the mills.

A NEW USE FOR MONEY.

Millions of dollars in Confederate currency have been put to a use never dreamed of when printed. A canny individual bought this money up for years, and in turn sold it to the Edison Electric Company for a good price. For certain small incandescent lamps which the Edison people were manufacturing a certain kind of carbon was needed which could best be obtained from paper made out of sea grass. The Confederate money was all made out of sea grass paper. From this the carbons for the lamps could be manufactured.

NEW USE FOR SEAWEED.

An English scientist has succeeded in obtaining seven gallons of fuel oil from a ton of seaweed.

NOT AFTER WAYAGAMACK

P. T. Dodge, president of International Paper, denies that his company ever contemplated or conducted negotiations for the purchase of Wayagamack Pulp and Paper, as reported in the *Street* a few days ago.

SOUTHERN LUMBERMAN EDITOR RESIGNS.

Mr. S. C. Ewing for eight years editor of the *Southern Lumberman* of Nashville, Tenn. has resigned and has been succeeded by Mr. S. F. Horn.

Mr. Horn has been in the employ of the paper for several years and as editor will doubtless maintain the high standard set by the previous editor.

Trade Openings in South America --- Argentina

Report of Acting Trade Commissioner.

(Mr. BERTRAM S. WEBB.)

Buenos Aires, May 1, 1916.

Paper Manufacturing in South America.

While it is true that up to the present no tree has been found in South America suitable for the production of wood-pulp for paper-making on a commercial scale, there are several large paper-making mills operating in Argentina, Uruguay and Brazil. These mills do not attempt to manufacture high grade, coated or calendered papers, but confine themselves to cheap white wrapping papers and low-grade book-printing papers.

The customs tariffs of the different republics have been framed with a view of protecting these industries. Thus we find, in the case of Argentina, that imported wrapping papers which can be made locally are required to pay a duty of eight cents gold per kilo., while newsprint, which cannot be manufactured satisfactorily, is allowed in on payment of a duty of only one cent per kilo. Wood and chemical pulp is admitted, free into Argentina.

Some qualities of paper are manufactured in the local mills at a figure closely approximating the landed cost of the imported competing article. This landed cost varies with the cost of ocean transport and other factors; when freights are high, the local article is easier to manufacture and sell than when freights are low. There are mills which will commence to manufacture certain kind of book paper, as soon as the cost of the imported paper has reached a level sufficiently high to make competition profitable, and will cease to manufacture when prices fall. The importation of wood-pulp for paper manufacturing therefore fluctuates from year to year.

Argentina's Imports of Pulp.

Argentina's consumption of wood-pulp has been steadily increasing during recent years. The average importation for the past seven years has been some 25,000 tons, per year. In 1913, 31,992 tons were imported; in 1914, 23,000 tons; and in 1915, 15,000 tons. Details as to countries of origin are available for years up to 1913, when the importation was as follows:—

	1909-1913.	1913.	1914.	1915.
	Metric tons.	metric tons.		
Sweden...	44,000	17,620	.....	—
Germany	32,000	3,760	.....	—
Russia	24,000	Nil.	.....	—
Norway	19,000	8,752	.....	—
United States ...	1,600	890	.....	—
Holland	1,400	384	.....	—
United Kingdom .	1,100	Nil.	.....	—
Other countries .	2,700	500	.....	—
	125,800	31,992	23,000	15,000

It is understood that a large proportion of the tonnage credited to Germany is not of German origin, but is Scandinavian pulp exported through Hamburg, and financed by Hamburg houses. Norway is gaining ground rapidly as an exporter of pulp and also of roll news. Agents have recently been appointed in Buenos Aires for two Norwegian mills which previously have not been represented.

On 1903, Brazil imported pulp to the value of \$17,000

gold, which would correspond with 400 tons of pulp. The figures for the following years were:—

1904.....	466 tons.	1911.....	5,312 tons.
1905.....	1,016 "	1912.....	6,117 "
1906.....	1,838 "	1913.....	6,002 "
1907.....	620 "	1914.....	3,455 "
1910.....	3,504 "	1915.....	4,619 "

Details as to the countries of origin are not available for the respective years, but the United States has been credited with large proportions of the total quantities, while Canada appears to have supplied but small quantities. It is probably true in the case of Brazil, as it is the case of Argentina, that large quantities of Canadian pulp are being entered for customs purposes, as products of the United States.

It will be seen that paper-making in Brazil is a comparatively new industry. While only able to utilize 400 tons in 1903, she was able to handle fifteen times quantity ten years later. The heavy falling off in 1913 was probably due to internal economic conditions which will have continued during 1914 and 1915, but if conditions in Brazil have any resemblance to those of Argentina, there will be an improvement during the coming year.

Uruguayan Imports of Pulp.

There are one or two mills in Uruguay, but their consumption of pulp would probably be very small (about 2,000 tons yearly). For practical business purposes, Uruguay may be considered as forming part of Argentina. Historically, Uruguay and Argentina formed one republic under the title of United Provinces of the River Plate, and commercially, they may still be looked upon in that light.

The names and addresses of paper mills in South America, together with general information in regard to size and output, may be obtained on application to the Commercial Intelligence Branch of the Department of Trade and Commerce.

Import Tariffs on Paper Pulp.

The following is a schedule of the Import Tariffs on paper pulp going into Argentina:—

Argentina:—

Wrapping papers ..	.8 cents gold per kilo.
Newsprint papers	1 " " "
Writing, bond and book papers (white)	3 " " "
Tissue paper.....	
Cover paper	
Coated or satin papers	25% ad valorem.
Carboard and pulp-board.....	
Carbon papers.....	
Woodpulp, punched ..	Free

\$1 Canadian gold equals \$1.04 Argentine gold.

Brazil:—

Printing paper ..	10 reis per kilo.*
Wallpaper	2,600 " " "
Wallpaper, gilt or silvered.	4,000 " " "
Wrapping paper, rough both sides	200 " " "
Wood-pulp for paper mfg. .	10 " " "

*1,000 reis (1 milreis) equals 32 cents Canadian.

Uruguay:—

Wood-pulp of vegetable fibre Duty free.

Sources of Supply.

Scandinavia, Germany and Russia, in the past have had a monopoly of this trade, but since the outbreak of war considerable quantities of North American chemical and wood-pulp have been imported. There appears to be a world-wide shortage of wood-pulp just now, and the factories seem to have had difficulty in obtaining the quantities of North American pulp they would have desired. But the difficulties attendant on importing pulp from Scandinavia are not so serious now as they were twelve months ago, and the demand for North American pulp may not be so brisk to-day as it was then. Still, the fears which were entertained eighteen months ago regarding the maintenance of supplies of pulp for the mills, will undoubtedly lead the factories to make a wider geographical distribution of their orders in the future to include Canada and the United States. Canadian pulp mills are actually exporting to this Republic, but there is much more business to be had for the mills which care to make a serious effort to obtain it.

Requirements of the Argentina Market.

About one-half of the local demand is for ground wood-pulp and one-half for chemical pulp. The pulp must come in sheets, packed in bales, and the sheets must be punched. An illustration of a sheet of pulp, punched for entering duty-free into Argentina, may be seen at the Department of Trade and Commerce. A shipment of pulp arriving here unpunched would be considered by the Customs authorities as printing paper, and would have to pay duty as such. The need for shipping chemical pulp in sheets packed in bales becomes apparent when it is remembered that ocean freight rates on this article are calculated on the basis of cubic measurement. Chemical pulp in rolls occupies about 20 per cent more space than when packed in bales, and with the present high rates of ocean freight, the difference in landed cost becomes very important. There is an important difference in the method of calculating rates on pulp for shipment by rail and for ocean shipment.

Good wood-pulp from Europe comes practically dry, whereas Canadian wood-pulp is usually only 50 per cent dry, the effect of which is that in the latter case, the importer has to pay freight on 50 per cent of water. Local mills have imported small quantities of Canadian ground pulp but state that they are not inclined to repeat the experiment, so long as dry wood-pulp can be obtained from Europe. Ground wood-pulp must be punched for customs purposes in the same manner as chemical pulp.

Representation Required.

A Canadian mill desiring to tender for the supplies of the local factories, can do so either through a local representative or through a Canadian or New York commission house having a branch in Buenos Aires. It is very doubtful whether anything concrete can be accomplished by correspondence. Whatever the conditions of the supply contracts may be (and reliable information on this head is not easily obtainable) factories will insist upon making their contracts with a representative established in Buenos Aires, and with one who understands something about the trade.

THE MAKING OF BOOKS.

A reduction of one-third in the imports of paper and wood pulp into the United Kingdom is a harassing innovation to which the newspapers do not take too kindly. It is pointed out by The London Chronicle that while restrictions are placed upon the staple raw material of publishers, the raw material for brewers enters without question. The book publishing trade in Great Britain has been seriously affected by the restrictions on paper imports, and echoes of the discussion which the new regulations have provoked were heard at the annual meeting of the Royal Literary Fund. Authors who have already suffered by the war are badly hit by the reduction in paper imports. The annual report showed that out of fifteen thousand dollars voted in grants six thousand dollars went to authors compelled to make application owing to their distress. A Paper Commission has been appointed to regulate the supply of paper throughout the United Kingdom, and Sir Frederick Macmillan has been chosen to represent the peculiar demands of literature. Last year the number of books published had decreased by eight per cent as compared with 1914, and by thirteen per cent as compared with 1913.

The restricted supply of paper will not have been an unmixed evil if it stirs publishers to be more exacting and discriminating in the selection of authors' manuscripts.—Toronto Globe.

AN ECHO OF THE PAST.

—The present campaign to save rags and paper waste is by no means a novelty. As far back as 1801 the founder of one of America's great paper mills circulated the following appeal, which has a decidedly familiar sound:

AMERICANS!

Encourage Your Manufactures And They Will Improve!

LADIES, SAVE YOUR RAGS!

As the subscribers have it in contemplation to erect a paper mill in Dalton the ensuing spring, and the business being very beneficial to the community at large, they flatter themselves that they shall meet with due encouragement. And that every woman who has the good of her country and interest of her own family at heart will patronize them by saving her rags, and sending them to their Manufactory or to the nearest Store-keeper—for which the subscribers will give a generous price.

Henry Wiswell.
Zenas Crane.
John Willard.

Worcester, February 8, 1801.

WHAT THE PRESS CAN DO.

The printing press has made presidents, killed poets, furnished bustles for beauties and punished genius with criticism. It has curtailed the power of kings, graced the pantry shelves and "busted." It has converted bankers into paupers and made lawyers of college presidents. It has educated the homeless and robbed the philosopher of his reason. It smiles and cries and dies, but it cannot be run to suit every one, and the man is a fool who tries.—Trail News.

PULP AND PAPER NEWS

Alex. Buntin, of the Buntin Reid Co., wholesale paper dealers, Toronto, and family, are spending a holiday at Kamouraska, Qué.

The Hugh Munro Lumber Co., Limited, with a capital stock of \$40,000 and head quarters in Toronto, have been granted a charter. The incorporators are Hugh Munro, James Munro and Arthur Munro and the company are empowered to deal in timber, lumber and other products.

A. G. Pounsford, Safety Engineer for the Ontario Pulp and Paper Makers' Association, has returned from an extended trip to Fort Frances, Dryden, Sault Ste Marie and other points in northwestern Ontario in the interest of his work.

C. Leslie Wilson, who has for some time been General Manager of the Toronto News, has retired from that position.

Samuel Wesley of Barrie, Ont., who was one of the oldest publishers in Ontario and for many years owner of the Barrie Advance, passed away recently. He was sixty-three years of age and is survived by his wife and two sons.

Capt. A. P. Miller of the 21st Battalion, who is a graduate of the Royal Military College, Kingston, and is now at the Front, has been awarded a Military Cross. He is a son of Peter Miller of Miller Bros. and Co., Limited, manufacturers of straw and wood pulp board, Glen Miller, Ont.

The mill of the Crown-Willamette Paper Co. at Oregon Falls, Oregon, is being dismantled and the equipment shipped to Ocean Falls, B.C., where Pacific Mills Limited, are erecting a new newsprint plant. The Crown-Willamette Co. are largely interested in the new proposition. Hon. Mr. Bowser, premier of British Columbia, and several members of the provincial cabinet recently paid a visit to Ocean Falls where they found three hundred men employed in the erection of the new buildings. It is expected that the paper mill will begin operations in April next and about a million and a half dollars are being invested in the Falls. It is stated that the output for the first year has been contracted for by Australian papers who are already large buyers of British Columbia newsprint.

E. C. Martin of Buffalo, N.Y., who is a former resident of Toronto, spent a few days among the trade in Toronto last week. He is the representative of the Scott Paper Co., of Philadelphia.

Charles T. Pearce, formerly Business Manager of the Toronto News and now Toronto Manager for A. Mc-

Kim, Limited, has entered action at Osgoode Hall, Toronto, against S. Frank Wilson and C. Leslie Wilson to recover five thousand dollars alleged due under an agreement for the purchase of one hundred shares of the News Publishing Co. The agreement is said to have been dated March 11th and the purchase was to have taken place on April 1st, 1916.

Improvements are being made to the Montrose Division of the Provincial Paper Mills Co's mills at Thorold, Ont. A new hundred and fifty horse power tubular return boiler is being installed making four in all, while several other changes are being effected.

The International Land and Lumber Co., whose headquarters are at Ottawa, intend erecting a hundred ton pulp mill on the Ashuapmauch river in the Lake St. John district. The company own several hundred miles of limits on the east shore of the lake. Among those back of the project are J. L. Bate, R. N. Bate and Thomas Askwith, of Ottawa.

Some six hundred men are now at work constructing the coffer dam for the Matagami Pulp and Paper Co. at Smooth Rock Falls, Ont., and also excavating for the foundation of power house and the sulphite mill. Good progress is being made considering the scarcity of labor. The contractors report that they could use several hundred more men but are unable to secure them.

The large plant of the Dominion Hardwood Co., Limited, at Deseronto, Ont., which is a new industry, was totally destroyed by fire this week. The company had just commenced to operate to full capacity. The loss is about one hundred thousand dollars but it is expected that the industry will be rebuilt.

It will be remembered that the Express at Sault Ste Marie, Ont., was suppressed by chief press censor, E. J. Chambers, sometime ago for a period of three months because of the nature of an article on recruiting and the war which appeared in its columns. When the paper was suspended C. N. Smith, former M.P.P., who is the publisher of the Express, asked the censor to permit him to issue one fly sheet in order that he might carry out several municipal contracts with respect to announcements. The Express has just reappeared and consists of a single sheet printed on one side only and carries a line across the top of the page to the effect that it is published "by permission of the chief censor." The only other reading matter is a statement from the publisher which contains much of the interesting correspondence from the Government respecting the suspension of the paper.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, July 12.

The Union Bay and Paper Company has installed a new 156-inch paper machine in Mill No. 5 at Hudson Falls, N.Y. The capacity of the machine will be 45 tons of bag paper daily.

* * *

A despatch from Kalispell, Mont., states that a representative of the Great Northern Railroad recently conferred with P. N. Bernard, of the Chamber of Commerce, as to the possibilities of a pulp and paper mill at Bigfork. Supervisor R. P. McLaughlin, of the Blackfeet forest has also been working on a plan for the utilization of timber in the national forests for pulp making purposes. Bigfork is considered an excellent site, as it would form a central point for the timber of the Flathead and Bigfork basins, has the power, water and many other attractive features from a manufacturing standpoint. Lodge pole pine is a superior material for the manufacture of paper pulp, and can be had in large quantities there.

* * *

The Economy Paper Company, San Francisco, Cal., has been authorized to issue 225 shares as a stock dividend, and thereafter to issue 182 shares to the trustees of the Los Angeles Waste Paper Company for the satisfaction of indebtedness.

* * *

The Lockport Paper Company, Lockport, N.Y., has entered into an agreement with the City Council whereby the assessment against the company's property in 1915 has been reduced from \$93,000 to \$80,000. The city has been ordered by the court to refund the company \$354.17 paid in excess taxes before the paper company started certiorari proceedings to have the amount of its assessment reduced.

* * *

Plans are under way for a big field day to be held at Sebago Lake, Saturday, July 15, for the employees of the S. D. Warren & Company paper mills, Westbrook, Me. Nothing has been definitely arranged as yet, but the feremen of the various departments are working for the event, which is expected to be very largely attended.

* * *

The Ravenswood Paper Co., of Long Island City, N.Y., has purchased a plot 190 x 327 feet on Van Oust St. The property will be improved in connection with the company's paper mill.

* * *

The Union Board and Parchment Co., of Hamburg, N.J., in order to accommodate its rapidly expanding business, has purchased a mill at Napanoch, N.Y., and will have it overhauled and put into operation as soon as possible. Henry Coslett, at present employed in the mill at Hamburg, will act as superintendent of the newly purchased property.

* * *

The Arrowhead Mill, formerly the Battle Island sulphite mill, will begin operations about the middle of

this month. Since this property was purchased by Arrowhead Mills, Inc., Company, the plant has been in process of rebuilding and repairing. The making of acid was begun July 1. The plant has three digesters with a capacity of about 60 tons daily. Two of the digesters, only, will be used until the third can be relined and put in condition. The acid system has been entirely rebuilt and much new machinery has been installed, including chippers, screens, wet machines, motors, agitators, etc.

* * *

Advices from Kalamazoo state that the Wolverine Paper Company is installing a new woving machine, which will nearly double the output. Many other minor improvements are being made about the mill. It will probably be several weeks before all of the work is completed. When the new building was started early in the spring it was hoped to have the structure finished by the last of May, but the difficulty in securing all the labor needed proved a slight handicap to the company.

* * *

The Court of Appeals has rendered a decision in favor of the defendant in the case of Tompkins vs. St. Regis Paper Co. John D. Tompkins, who for many years has been a manufacturer of wrapping paper made from straw, at one time stood at the head of the manufacturers of straw wrapping paper and was esteemed "a sort of peer in the business." In this suit Mr. Tompkins alleged that he was the first and sole inventor of certain new and useful improvements in the process of making paper pulp, and that the United States Patent No. 458,135 was issued to him therefor, dated August 18, 1891. He alleged infringement on the part of the St. Regis Paper Company and asked damages.

* * *

John S. Riegel, president of the Union Bag & Paper Company, and also of the Warren Manufacturing Company, died suddenly at his country home, Mamaroneck, N.Y., Thursday, June 29. The day before Mr. Riegel was apparently in his usual health. He was active in business, and among other duties attended a meeting of paper bag manufacturers at the Vanderbilt Hotel. His death is attributed to overwork and worry, which evidently fatally affected his heart. The funeral services were held at Riegelsville, Pa., on Monday, July 3. The honorary pall-bearers were Mr. Riegel's business and office associates, and the active pall-bearers were the superintendents of the mills with which he was connected.

* * *

The Rossing Plant of the St. Regis Paper Company at Carthage, N.Y., has resumed operations. The company has a contract with the Taggart Paper Company, by which the latter company's log drive which is now in the river, will be rossed at this mill and shipped to the Taggart mills at Great Bend, Felt Mills and Black River.

The plant of the Little Falls Paper Co., Little Falls, N.Y., which was destroyed by fire last winter, will in all probability shortly be renovated. A. F. Holden, owner of the mill, has arranged for a force of workmen to clear up the ruins of the establishment, the loss on which has been adjusted with the insurance companies. Asked as to whether or not the company would rebuild the plant(Mr. Holden replied that he had nothing to say at the present time, but would be in the city again in a few days, and might then have a statement to make. The impression seems to exist, however, that the mill will be rebuilt.

* * *

The George W. Wheelwright Paper Co., North Leominster, Mass., has increased the wages of its workers, and has issued notice that an additional 5 per cent beginning July 1, 1916, would be paid to all employees who remain with the company until January 1, 1917.

* * *

The Mohawk Valley Paper Co., of Little Falls, N.Y., has just added to its already modern equipped plant, a brick and concrete storehouse 50 x 100 feet. The company has also installed a new Dilts beater, and the floor of the beater room is now of concrete. A new boiler for the plant is on its way for installation. The plant will then have four boilers, three of which will be run constantly and the fourth will be held in reserve for emergency purposes. Business at the plant is booming.

About Barking and the Loss of Wood

(Svensk Pappers-Tidning Stockholm, Sweden. News-Print Mfgs Association.)

With the steadily increasing cost of pulp wood, the interest of the cellulose makers centers more and more on how to solve the problem of removing bark and bast from the timber without a material loss of wood. In these days of high costs when our authorities are hesitating to put a radical embargo on the exports of our raw material, which therefore has jumped up to prices hitherto unknown, there seems to be a very good reason to seriously consider the matter.

It is likely that not all consumers have made it clear to themselves how great a loss in reality is caused in barking, with the different methods now in use. In order to find this out, partly measuring and partly weighing is used. The surest way, however, is to figure out the displacement by the wood in water before and after the barking. The results generally arrived at have shown that the barking loss, that is the shavings of wood and bark falling off, amounts to about 15-25 per cent of the cubic measure of the unbarked lumber. In investigating the shavings the percentage of wood and bark may be ascertained, and in most cases it will be found that the wood percentage outweighs the other.

In most cases it will be found that the loss of wood is at least 10 per cent. When considering what this means, it is astonishing that such squandering still goes on.

A cellulose mill of medium size, consuming 24,720 cords of wood, in barking is losing at least 2,472 cords at \$7.59—\$18,760 a year. Many times exception is taken that these shavings were being used as fuel, but I

do not believe in the fuel value of these shavings. 2,472 cords of wood could be put to much better use.

If a research was being made for the cause of this enormous waste of wood, it would be found that the defective machines and apparatus, which are being used for barking, are to blame.

It could be said that all the barking methods now in use, generally have the fault that they are not fit for the wood such as nature in reality produces. If the lumber was almost cylindrical, with a smooth surface and this covered all over with bark, then several of the machines would be alright. But the fact is that the logs are not at all cylindrical, but are uneven, thick at the stump, knotty, twisted and only partly covered with bark when the log arrives at the barking machine. Now this is not constructed for making away all roughness, may it consist of wood or bark and in places where there is no bark left the wood, is cut off. It might be thought that in operating barkers by hand this disadvantage of not being able to differ between wood and bark was done away with. So it is, to a certain degree, but very much too little. In investigating the shavings from a hand barker, it will be found that also in that manner a lot of wood is squandered. There will be found long shavings which have but little bark. The explanation is that this work has to be done as piece work. To obtain a good result, the laborer arms himself with a draw-shave and cuts loose on the log as with a plane, thereby cutting off more wood than bark. The cleverer a laborer is, the more wood is wasted. One employer said that he got better results in using minors, old and feeble laborers. Nevertheless, hand barking nowadays, for several reasons, can be used only on a smaller scale and for cleaning up after machine barking.

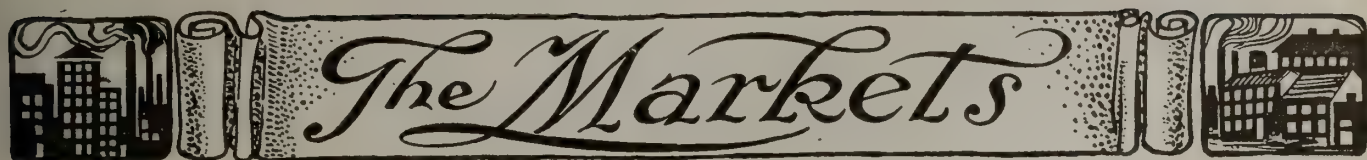
Regarding the many different barking machines and apparatus, now in use, it would be of the very greatest advantage for the matter in question if the members of the Papermills and Cellulose Associations could be induced to tell their experiences in the interest of this most important question. Maybe the thought of the great national importance of the matter could overcome the hesitation regarding some little imagined factory secret.

The writer of this has many years' experience in using barking machines and apparatus and experience has taught him that all machines which are constructed for barking by means of knives are very great wasters of wood. This is especially the case with machines which only take short logs. The loss of wood is then likely to exceed 25 per cent. The least wood wasting are drums of different models which are used for short as well as for long logs. But then the barking is very unsatisfactory and quite a lot of cleaning up by hand has to be done.

It seems to me that the Papermills and Cellulose Associations jointly should announce a substantial price for the best arrangement for barking pulp wood without any loss of wood worth mentioning.

Within the Papermills Associations large sums have been apportioned which have not near brought about results as would be the case with such a price, provided it was won.

Five tons of newspapers are daily thrown away in the Interborough Rapid Transit subway, and 7 1-2 tons of dirt are brought into the subway and cleared away each day.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

There will be no summer quietness in the pulp and paper trade this season as orders, which have fallen off somewhat late, have been given in sufficient quantity to keep all the plants busy for many months, even if no new business was offering in July and August. Prices on every line rule high and all signs point to no decrease in quotations.

News print is still very stiff and the prevailing figure on contracts, which are being renewed, in a few cases, is from \$2.35 to \$2.50 while, in the open market, it is not uncommon for as high as three cents and more to be obtained. There are many rumors of new plants about to be started in Canada. It has been known for some time that the Abitibi Power and Paper Co. intend adding two new machines and the width being discussed is 235 inches, which will make them the largest Fourdriniers in the world. Following this comes the announcement that the International Paper Co. have had plans prepared for the erection of a two hundred ton mill in Canada and that they will also erect a ground wood mill and sulphite plant. The site is not yet definitely known. Then the Ontario Paper Co. at Thorold is about to instal a third machine and the Donnacona Paper Co. of Donnacona, Que. a second machine which will double their capacity.

Price Bros. and Co. have contracted for a new 156 inch machine and are contemplating the installation of a 205 inch machine.

But this is not all. The new plants of the Union Bag and Paper Co., at Three Rivers, will give another contribution to the tonnage of Canada of one hundred tons and with the doubling of the plant of the Laurentide Co. and the proposed erection of a news mill by the Ha Ha Bay Sulphite Co. at Bagotville, and the erection of the new undertaking at Ocean Falls, B.C., the production of new print in the Dominion in another year will be augmented by nearly a thousand tons a day, an increase of fifty per cent during the coming twelve months. Canada is certainly coming to the front as a news print country and, if present progress keeps up, in less than three years there will be turned out in the Dominion as much news print paper as there is manufactured in the United States.

In touching upon the news print conditions a recent report of the Paper Committee of the Canadian Press Association, states that they have kept in close touch both as regards news print and other grades of paper and there have been numerous factors that have tended to affect the quantity of paper available and also to enhance the price in all lines. The report goes on to say that the contracts with Canadian papers are being lived up to in all cases and, while it has been rumored that some Canadian mills have been making new contracts in United States in preference to Canada, still it is not believed that it has been at all general or that the Canadian mills have been supplying American pa-

pers with much if any more paper than called for under old contracts.

It is of course inevitable that with a production of about eighteen hundred tons a day and a domestic demand of only two hundred tons, a very large proportion of the product of Canadian mills must be exported, new contracts have been made under present conditions, but, it is understood, that some members have made them recently at \$2.35 at the mill, preferring the reasonable assurance of getting a steady supply at the price rather than risk the possibility both of not getting paper regularly and of paying a higher price on a later contract. Whether higher prices will prevail or not it is a difficult question to answer and one on which there are divergent views. For instance, it is suggested by some, that the investigation now being conducted by the United States Federal Trade Commission into the news print industry may affect the market to the advantage of paper users.

In regard to book papers the committee declare that reports indicate an easier market in the United States and it is hoped some relief may be looked for from there in the near future. They have book paper making machinery across the line more in excess of their normal requirements than Canada has. The prices prevailing will, however, remain high for some time yet. The committee recommend that printers and newspaper publishers practice strict economy in the use of white paper, thus conserving the supply as much as possible. Some ways in which this can be done effectively are by reducing the size of their publications, lessening waste in the press room and eliminating returns from news dealers.

In the book and writing arena there is still considerable rush of business and there exists a scarcity of supercalendered book and cheap bond papers. Some of the mills report that large customers and wholesalers are trying to get heavy orders through at present prices but the plants will not accept delivery at long date ahead except at the quotation prevailing when shipment is made and then only providing they have the raw material in stock.

Coating mills are very active and the ruling high figure does not seem to have resulted in any diminution in business. No doubt some of the book mills would extend the same as the news print concerns are doing but they do not feel justified in such an undertaking at the present time, owing to the high cost of all mill equipment which is fully fifty per cent above normal and then deliveries are most uncertain. When times get normal again there will no doubt be additions which will increase the output of book, bond ledger and writing papers in the Dominion by, at least, fifty per cent.

There has been another advance in No. 1 manila and fibre of half a cent and in "B" manila and grey browns of a quarter of a cent.

Owing to the scarcity of labor and other causes grey browns will be delivered in future flat or left in bundleless and will not fold in sections or quires as in the past.

There is still more strength developed in the sulphite pulp arena, and the price now obtained at the mills is one hundred dollars per ton for easy bleaching. If the cost of pulp wood continues to soar, it will not surprise those who know, to see easy bleaching ascend fully twenty-five per cent more. Unless some relief can be obtained from Scandinavia, and shipments come in much more rapidly than they have and in larger quantities, the outlook for any drop in price is not bright. Ground wood mills are also busy and, owing to the shortage of labor, prices are gradually going up in this line, which has been the slowest to advance since the war.

In the rag and paper stock market, there is evidence of increasing prices and mills are buying more freely. Manilas are very strong and other stock is holding its own. Printing plants are fairly active and the outlook for the summer is good, considering the difficulty of getting skilled workmen and the absence of supplies on many desired lines of paper. Some customers are either taking cheaper grades owing to the high cost or are eliminating certain lines which they have been using for years on their printed matter.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls). \$2.50 up, at mill. in carload lots.
 News (sheets), \$2.75 up, at mill. in carload lots.
 Book papers (carload), No. 3, \$6.00.
 Book papers (ton lots), No. 3, 6.00c to 7.00c.
 Book papers (carload), No. 2, 7.50c to 8.00c.
 Book papers (ton lots), No. 2, 7.75c to 8.25c.
 Book papers (carload), No. 1, 8.00c to 8.50c.
 Book papers (ton lots), No. 1, 8.25c to 8.75c.
 Sulphite bonds, 9c up.
 Writings, 7½c up.
 Grey Browns, \$3.50 to \$4.50.
 Fibre, \$5.50 to \$6.25.
 Manila No. 1, \$5.00 to \$6.00.
 Manila No. 1, \$5.50 to \$6.25.
 Manila, B., \$4.25 to \$4.75.
 Unglazed Kraft, \$7.50 to \$9.00.
 Glazed Kraft, \$8.00 to \$9.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, bleached, 1.00c to 1.50c.
 Tissues, unbleached, 80c to 1.15c.
 Tissues, cap., 60c to 80c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.
 Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 40c.
 Paper bags, kraft, 25 discount.
 Confectionery bags, 20 discount.

Pulp.

Ground wood, \$22 to \$26.
 Ground woodpulp (at mill) \$18 to \$20.
 Easy Bleaching Sulphite, \$1.00 up.
 Sulphite, news grade, \$80 up.
 Sulphite (bleached), delivered, \$1.50 up.
 Sulphate, delivered, \$120 up.

Paper Stock.

No. 1 hard shavings, \$3.50.

No. 1 soft white shavings, \$3.00.
 No. 1 mixed shavings, 65c.
 White blanks, \$1.10.
 Heavy ledger stock, \$2.25.
 No. 2 book stock, \$1.00.
 No. 1 book stock, \$1.50.
 No. 1 Manila envelope cuttings, \$1.60.
 No. 1 print Manilas, \$1.00.
 Folded news, 65c.
 Over issues, 65c.
 No. 1 clean mixed paper, 52½c.
 Old white cotton, \$4.37½.
 Thirds and blues, \$2.50.
 No. 1 white shirt cuttings, \$7.25.
 Black overall cuttings, \$2.75.
 New light flannelettes, \$5.00.
 Ordinary satinets, \$2.05.
 Flock, \$2.15.
 Tailor Rags, \$2.10.

NEW YORK MARKETS.

New York N.Y., July 10, 1916.

Interest in ground wood pulp is now very acute. Prices have been inclining upward, and promise to continue so for some time. Of course, the exact course of the market will depend considerably on whether or not the summer is a dry one. However, regardless of what happens, it seems assured that prices will go much higher. At the present time, the demand for ground wood is very active. All of the grinders report operating at full capacity. Many mills have already sold their production for the coming year, while others have but little to offer. Consumers of ground wood are busy. The news plants, the wrapping mills and others are working day and night, consuming more ground wood than has ever been used in the history of the trade. This condition among the consumers is likely to continue throughout the summer, which will mean that instead of decreasing as usual the demand for ground wood will increase, and a shortage is likely to result. It is understood that those manufacturers who formerly used a certain percentage of ground wood with their sulphite, have been compelled to increase this percentage as much as possible, adding materially to the general needs of ground wood. Present indications are that the market will continue to advance, and that it will be difficult to obtain large lots of pulp.

The situation in chemical pulps has been growing more serious from week to week. At the present time there is no means of stating just what conditions are. So far as foreign pulps are concerned, the market is practically nominal. With the exception of one or two odd lots, which are being held for enormous prices, there is no foreign pulp on our docks to-day. Figures compiled by local importers show that available stocks have been almost entirely depleted. And what is more, the prospects for replenishing supplies in the near future are very poor. All advices received from the other side indicate that the quantity of stock which will be shipped from Sweden during the rest of this year will not amount to very much. It is said that costs abroad have been increasing tremendously, and that even our high prices are low compared with some

now being asked by the foreign pulp producers. Despite these high levels, Germany, England and the rest of continental Europe is anxious to buy from Sweden as much pulp as can be had. So it is apparent that little effort will be made to export to the United States. Talk is current about the shortage of wood. If this is founded on substantial truths, it may be a factor in forcing the market still higher. Whatever pulp is being imported at the present time, is going into immediate consumption, and can not be considered a factor. Domestic pulps are advancing in close sympathy with foreign stocks. Unbleached sulphite has now reached the stage where it is difficult to get, and where many concerns have withdrawn their quotations. Easy bleaching is very scarce, and is being sought at a premium. Bleached sulphite is practically unobtainable at any price. The same may be said of kraft pulps.

The rag market has been improving. Dealers report that they find a better inquiry from the mills, and are confident that this must materialize into a good demand. In fact, the indications are that the market will gain in strength each week. It is known that the writing mills and the other consumers of rags are now operating at full capacity, and that they have on their books enough orders to keep them operating continuously through the summer and into the fall. This means that there will be no dull season for rags, and that it is only a matter of time before most of the mills will find it necessary to buy stock. At the present time, there is not much available to the dealer who is in search of rags. The greatest part of the stocks have passed into the hands of some of the larger concerns, which are holding for large figures. Rag importations have now been reduced to a point where they are of no consequence as market factors. It is possible that, as the prices paid for rags go higher, domestic collections will increase, for it is known that the volume of rags collected in this country is dependent upon the prices which are being paid by the mills. Just now, new rags are in better demand, and there is also notable improvement in such grades as old whites, thirds and blues and black stockings. Roofing is showing an upward tendency. Should roofing commence moving as it did several months ago, it is likely that all other grades of rags will be accelerated in proportion.

Bagging has not changed to any extent. While the demand has improved a little, prices are about the same. However, dealers expect that bagging will finally be forced to a high level. This theory is based on the shortage of stocks. It now seems apparent that England will not allow any bagging to go to the United States. All negotiations to this end have been unsuccessful, and discouraging. So, with the chief source of our supply cut off, prices are bound, say the dealers, to go up. Rope has advanced and is destined to advance still further for the same reasons that are "boosting" bagging. It was thought, after England had placed an embargo on rope, that licences would be granted for a number of shipments. But it seems apparent, from the activities of some of the greatest consumers, that no stock is forthcoming, and that there is little, if any, prospects of any future shipments.

Waste papers have been fluctuating a little. The general tendency is upward, but the demand has not been steady enough to maintain firm prices. Shavings, both hard and soft, are going fairly well. These grades

are expected to show to better advantage, as time passes, because they can be substituted for rags and sulphite. Kraft papers, too, are in demand, largely because of the shortage of kraft pulp. It is understood that some mills are using old kraft papers to replace jute stock. Mixed papers are holding the high level. The same is true of overissue news, and strictly folded.

In the paper market, all indications are for higher prices. Within the past few weeks, further advances have been announced by many mills. The cost of manufacture is constantly increasing, and mill owners declare that their prices must, in the future, be regulated accordingly. Reports show that all of the plants are working at capacity, with orders far ahead. Many mills are still unable to take on new business. The action of news print within the past few weeks has been surprising. Instead of the demand easing off, because of the summer, it has not only continued at its greatest strength, but has even showed signs of growing stronger. This, too, in the face of the efforts of the newspaper publishers to decrease consumption. Mill owners credit this extraordinary condition to the unusually large amount of national advertising.

Wrapping papers are all firm, and selling at good prices. In Manilas, a number of concerns refuse to take on new business. A few plants have opened their books at increased figures. The same condition is true of fibres. Krafts are almost unobtainable, except in odd lots, which are held by jobbers. Most of the mills have sold their production ahead. Tissues are practically indescribable. White tissues and Manilas can be had only at big prices, and even then it is questionable just how many mills will take orders. Book papers have lost none of their strength, few mills taking any orders. Boards are very firm, with prices going higher. Paper bags are firm, although the demand has eased off.

R. W. JOLLY.

THE POWER OF THE PRESS.

The Nation (London).

"It is perhaps significant that the victory of the machine has come simultaneously in industry and politics. This dual victory finds its most obvious and complete expression in the newspaper. The written word has now definitely ousted the spoken word as the democratic instrument, and the mass meeting has yielded to the press campaign. Public debate is dead, and oratory is closing up its eyes. We still hear cant phrases about the power of the rhetorician and the wind-bag. The true demagogue of to-day is the lord of news, and the stabbing sentences of the cunning journalist do more to mould and warp the public will than a thousand orators upon a thousand platforms. The modern newspaper, or rather the modern newspaper group, appealing to every section of the public at every price, is one of the most miraculous achievements of mechanical progress. It gathers all the news of the world in a moment of time, and speeds it to all the corners of the land in a moment more, and demands but a trivial price. It can say to a nation in ten minutes what an orator would say to a thousand people in an hour.

A RUNAWAY PAPER MARKET.

Boston News Bureau.

It is probably no alarmist statement to assert that not for many years have conditions in the newsprint industry so threatened a runaway market as they do today. For several years the production of newsprint in the United States has not only failed to increase, but it has slightly retrograded, due to the diversion of mills from newsprint to other classes of paper production.

For three years the increase in consumption has been subnormal. In fact for the three years 1913, 1914 and 1915 official figures show a gain of but 6% in American consumption of newsprint. All of this increase and more, too, came from the output of Canadian mills, now estimated to be shipping over 1000 tons of newsprint into the United States daily.

But for the past nine months American demand for newsprint has gone up steadily week by week. The officials of the News Print Manufacturers' Association estimate that advertising in the nation's papers is running 35% larger than a year ago. This means a big increase in demand for paper for this one purpose.

As a result of the steadily growing demand the surplus stock of newsprint in the United States has been drawn down to the smallest figures in history. At this season the mills should be meeting a slump in demand due to seasonal changes. None has come. There is no chance for mills to accumulate stocks, and all that has saved the situation to date has been the fact that wet weather has enabled eastern mills to run at capacity where in an ordinary year low water would have forced part time operations.

Some judges feel that it will be a miracle if some papers do not have to suspend publication within the next six months. Of course this does not mean the big metropolitan dailies, but the smaller suburban dailies and the little weeklies.

It is estimated that due to higher labor and raw material costs the expense of producing newsprint is averaging \$3 per ton more than in 1915. The manufacturers are getting this back in the price. That much of an advance is justified by actual conditions of expense. What some of the longer headed newsprint mills apprehended is that an unwise advance in price will produce a situation that will hurt the sustained earning power of the industry. High priced newsprint brings down the wrath of the publishers, stimulates unwise competition and hurts generally far more than it helps.

ENGLISH FOREST AREAS.

Many Canadians who have not visited Great Britain suppose that there is little woodland in the old country, and it is natural to think of the United Kingdom as cleared of timber and cultivated like a garden.

In England and Wales, according to a recent report of the forestry branches of the British Government, there are nearly 2,000,000 acres of forest, and large areas of uncultivated land on which it is the intention to cultivate a growth of timber. There are, it is estimated, 2,500,000 acres of afforestable land in England and Wales.

Of course most of the British forests are held for park and estate purposes. The area of crown forests in England and Wales is only 65,765 acres, made up mostly of the historical estates of the crown.

NEWSPAPER OUTPUT.

More people now read newspapers and magazines than ever read them before, and yet the number of publications in the United States is growing less, says the New York correspondent of the Philadelphia Public Ledger:

Last year, 1,412 new dailies and periodicals were born, but 1,547 perished, so that the decrease was 135. We still have, according to N. W. Ayer, who annually takes a careful census of what the printing press does, 34,589 publications. That includes daily and weekly newspapers as well as magazines of all kinds. There are nearly seven times as many weeklies in America as dailies, the exact figure being 17,156 and 2,646.

The evening daily newspaper is much more prevalent than the morning, as there are 1,884 of the former and only 698 of the latter in the entire country.

WHITE-PINE BLISTER RUST

The white pine blister rust has reached a stage where, according to specialists of the United States Department of Agriculture, energetic action is imperative if the disease is to be controlled. Not only is all of the Eastern white pine threatened already, but there is little doubt that if rigid State quarantines do not stop it the infection ultimately will ravage the great forests of the West.

The mature white pine in the Eastern States is valued at approximately \$186,000,000. In the West the mature stands of sugar and Western white pine are valued at \$240,000,000. In Farmers' Bulletin 742, a new publication of the Department of Agriculture, it is declared that each State west of the Missouri River should prohibit immediately all shipments from the East of five-needle pines or of currants and gooseberries, which play an important part in the transmission of the disease.

In Ontario the Department of Lands & Forest is sending out inspectors to look over the white pine seedlings planted a few years ago.

NEW DIRECTOR OF WAYAGAMACK.

At a recent meeting of the directors of the Wayagamack Pulp and Paper Company, Mr. Henning Helin was elected to the board. Mr. Helin was prominently identified with the development of the manufacture of kraft paper in Scandinavia, where he was looked upon as the leading authority in that industry. He has been with the Wayagamack company since its beginning, and his knowledge and experience were of great value to the company in the construction stages. He has been technical manager since the plant has been in operation and the output and character of the company's product are largely the result of his methods.

Mr. Helin fills the vacancy on the board caused by the death of the late J. Reid Wilson.

MACHINERY HOUSE RECEIVES LARGE ORDER.

The St. Maurice Paper Company have placed an order with MacKinnon, Holmes and Company, Limited, of Sherbrooke for difusers, cauterizing tanks, dissolving tanks, lime slacking and mixing and liquor tanks. This same machinery house supplied half the tank equipment of the Wayagamack Mill, as well as twenty evaporator wheels and full equipment for the same.

315a

Canadian Wood Pulp

The following interesting extracts are made from a very interesting article on the possibilities for Canadian wood pulp on the British market, in an article in the May number of "The Papermaker and British Paper Trade Journal":—

British and U. S. Imports.

"In 1903 this country's imports of Canadian pulp reached a value of \$1,129,173, against \$1,795,768, the value of that exported to the United States, the total exports amounting to \$3,150,943. Since that period, the volume of British imports of chemical and mechanical pulp from Canada has been much smaller than those made by the American paper manufacturers, and during the five years 1909-1913 have been of the average value of \$803,058, compared with \$4,286,000, the value of the imports by the United States, while the Dominion's total export of wood pulp has averaged \$5,186,181 in value.

The close juxtaposition of the United States to Canada naturally gives the United States a very considerable advantage over us on this side of the Atlantic in securing rapid supplies of wood pulp from Canada, and no one can reasonably quarrel with either Canada for selling and with the United States for buying. However, within a comparatively few years the Dominion, with its close neighbour, Newfoundland, ought to be in the position of being able to supply not only the United States and Great Britain, but other countries as well, with all the pulp they require for paper-making purposes.

Effect of the Swedish Embargo.

"That such a consummation is becoming extremely desirable, at any rate, from the British point of view, has never been more vividly demonstrated than during the past two or three months. Under the stress of the greatest war in human history, British paper-makers have realized that their reliance for wood-pulp supplies upon the Scandinavian countries, hitherto so pronounced, has been greatly weakened by the action of Sweden in placing an embargo upon that country's exports of chemical pulp. This quickly produced a bad impression in the ranks of the British paper-making industry, and has done more than anything else could have done to revive this country's interest in the great pulp wood producing areas of Canada.

Opportunity for Increased Business.

"The paper manufacturers of this country have hitherto only touched the fringe of Canada's resources in wood pulp, but there is no doubt that the opportunity is now at hand for a great increase in the business relationship between the British paper-maker and the Canadian pulp manufacturer.

Canadian Product Superior.

"Canadian mechanical wood-pulp possesses the remarkable feature that it is longer and stronger in fibre than Scandinavian, and is thus better adapted for news, required to run over the fast rotary printing machines of to-day."

Chemical Pulp Possibilities.

What Canada has achieved in the manufacture of ground wood-pulp will be assuredly accomplished with like success in the manufacture of chemical wood-

pulp, sulphite and sulphate, and in this expansion of her enterprise may learn from the example and experience of the United States which, in the early nineties, could not produce chemical wood-pulp to compete with Scandinavian pulps. They were poor in quality, dirty and altogether unsatisfactory, but continuous study and application in the course of a few years put the United States on a very different footing. Chemists and technists persevered until to-day the United States is able to produce about 1,250,000 tons of sulphite and 425,000 tons of sulphate wood-pulp. Canada, too, has gone ahead, and will continue to expand the sulphite and sulphate pulp industry. Canada possesses the right kind of wood, in quantity and quality, besides being rich in unrivalled transport facilities and splendid advantages in regard to sites.

This makes it perfectly clear that Canada can if given adequate support in respect to capital, place Great Britain in the position of being independent of foreign sources for its wood-pulp.

Abnormal Prices for Chemical Pulp.

A correspondent in one of the daily papers, referring to present high prices for paper in Great Britain, says: "The present abnormal prices are due principally to the action of the Swedish Government in prohibiting the export of chemical pulp to this country. In normal times this country supplies the United Kingdom with two-thirds of the chemical pulp which is imported, and in consequence of this supply being shut off the price has risen from about £8 per ton, which was the approximate price before the war, to £35 or £40 per ton, which is a rise of from 300 to 400 per cent."

ALUMINA SULPHATE

17%

Grade No. 1.—Exceptionally pure, takes the place of English and German iron free alumina sulphate. Used in the manufacture of blue-print papers and the finest grades of paper.

Grade No. 2.—The regular 17 per cent sulphate of alumina, used by the majority of paper manufacturers in the United States of America.

On behalf of manufacturer will contract with paper mills for their requirements covering term of one or two years.

Wm. A. Rushworth
MANUFACTURERS' AGENT
205 Yonge St., Bank of Toronto Bldg.
TORONTO



"AMPHIBIA" Belting has been Made
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No lost motive power where "AMPHIBIA" Leather Belting is used.

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Galt Building

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Fraser, W., Montreal
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Sadler & Haworth, Montreal.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. F., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Cars, Dump and Flat

Fraser, W., Montreal
Sessenwein Bros., Montreal

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Diffusers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digester Lining:

Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Ont.

MILL SUPPLIES---Continued

Penmans, Ltd., St. Hyacinthe, Canada
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N. Y.
 Voith, J. M. Co., Inc., New York, N. Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N. Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

Crookes, Roberts & Co., Sheffield, Eng
 Disston, H. & Sons, Ltd., Toronto, Ont.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotives:

Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built

Sessenwein Bros., Montreal
 Fraser, W., Montreal

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada
 Carthage Machine Co., Carthage, N. Y.
 Downingtown Mfg. Co., East Downingtown, Pa.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn
 Glens Falls Machine Works, Glens Falls, N. Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E. C., England.
 Moore & White Co., Philadelphia, Pa.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Norwood Engineering Co., Cowansville, P. Q.
 Process Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N. Y.
 Ticonderoga Machine Works, Ticonderoga, N. Y.
 Voith, J. M., New York, N. Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N. Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N. Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N. Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Fraser, W., Montreal.
 Gartshore, J. J., Toronto
 Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E. C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N. Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manila:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Stebbins Engineering and Manufacturing Co., Watertown, N. Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N. Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N. Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N. Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N. Y.

Smoke Stacks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

MILL SUPPLIES---Continued

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jones & Glassco, Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Travelling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurttemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Tippet, Arthur P. & Co., Montreal, Canada.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R. Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.

Lincoln Paper Mills Co., Ltd., Merriton, Ont.

Ford, J. & Co., Port Neuf.

Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.

Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.

Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que. and Montreal, Que.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.

Eddy Co., The E. B., Ltd., Hull, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Langling:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmillier, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue
John Martin Paper Co., Ltd.
Teese & Persse, of Alberta, Limited.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Teese & Persse, of Alberta, Limited.

VANCOUVER, B.C.:

Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104 1/2 Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

FORT WILLIAM, ONT.:

Tees & Persse.

TORONTO, ONT.:

Barber-Ellis Co., Ltd., 71 Wellington Street W.
Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

MONTREAL, QUE.:

Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. De Wolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill.
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.

QUEBEC, QUE.:

Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

FOREIGN:

Salomon & Co., Felix, New York City.
Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., England.
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York.
Scandinavian American Trading Co., New York, N.Y.

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A	
Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68
B	
Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Bathurst Lumber Company.....	3
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge, Jas., Chatham, N. B.....	62
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6
The Bronson Company.....	14
C	
Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	7
Capital Wire Cloth Mfg. Co., Ltd.....	7
Carthage Machine Co.....	2
Chambers, Ltd.....	67
Chicoutimi Pulp Co.....	67
China Clay Co.....	62
Christie George, Ltd.....	62
Churchill & Sim.....	13
Crookes, Roberts & Co.....	65
Crossley, T. L.....	65
D	
Darling Bros, Ltd.....	13
DeCew, J. A.....	64
Dean & Son.....	65
Disston, H. & Sons, Ltd.....	65
Dominion Belting Co.....	54
Dominion Pulp Woods' Limits.....	16
Downington Mfg. Co.....	61
Dunlop Tire & Rubber Goods Co., Ltd.....	61
E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9
F	
Farrel Foundry & Machine Co.....	11
Ferguson, H. S.....	64
J. Ford & Company.....	65
Fraser, W.....	65
G	
Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	63
Glens Falls Machine Works.....	63

Groot, H. de.....	41
H	
Hardy, Geo. F.....	64
Hartig, Hugo.....	65
Hay Knife Co., Peter, Ltd.....	65
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	12
Huyck, F. C., Sons.....	12
J	
Jeffrey Mfg. Co.....	60
Jenssen, G. D. & Co.....	64
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6
K	
Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7
L	
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	60
M	
Mackinnon, Holmes & Co.....	48
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	68
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15
N	
Northern Crane Works, Ltd.....	13
Norwood Engineering Co. of Can. Ltd.....	13
O	
Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9
P	
Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	62

R	
Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	48
S	
Sadler and Haworth.....	50
Salomon & Co., Felix.....	65
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	62
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64
T	
Taylor, J. A.....	62
Ticonderoga Machine Works.....	6
Tippet, Arthur P. & Co.....	13
U	
Union Screen Plate Co. of Canada, Ltd.....	18
Union Sulphur Co.....	18
V	
Vera Chemical Co. of Canada, Ltd.....	7
Voith, J. M.....	12
W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	64
Wilson-Paterson Co.....	64



Barber Paper Mill, Georgetown, Ont.



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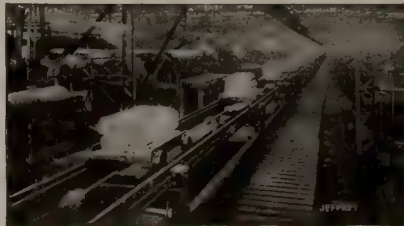
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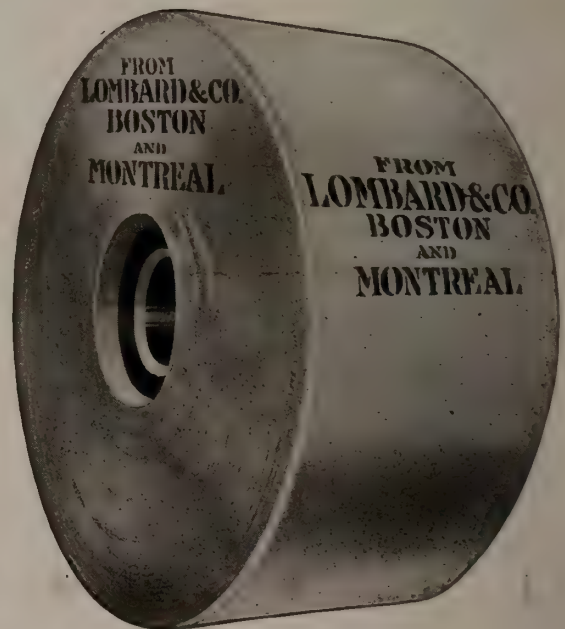
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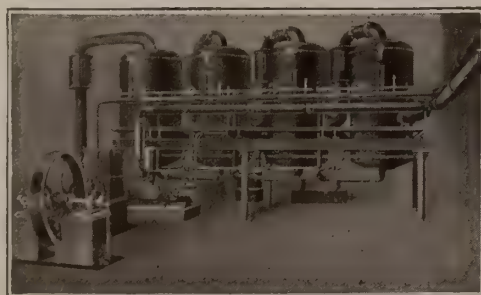
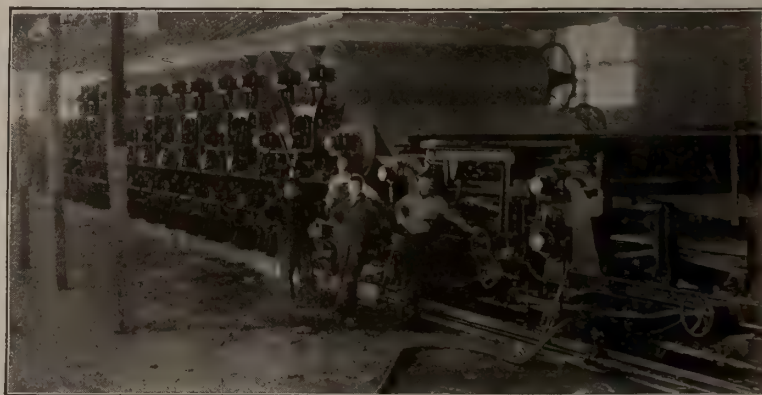
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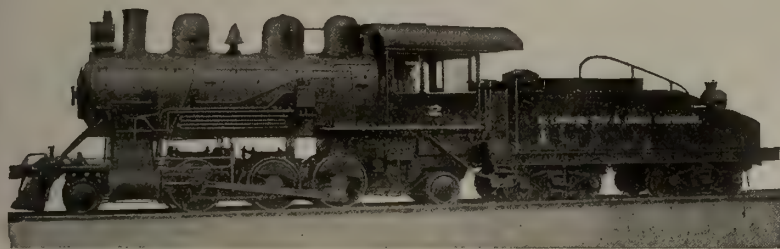
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NEWS

MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 3

BUYERS' DIRECTORY, PAGE 51

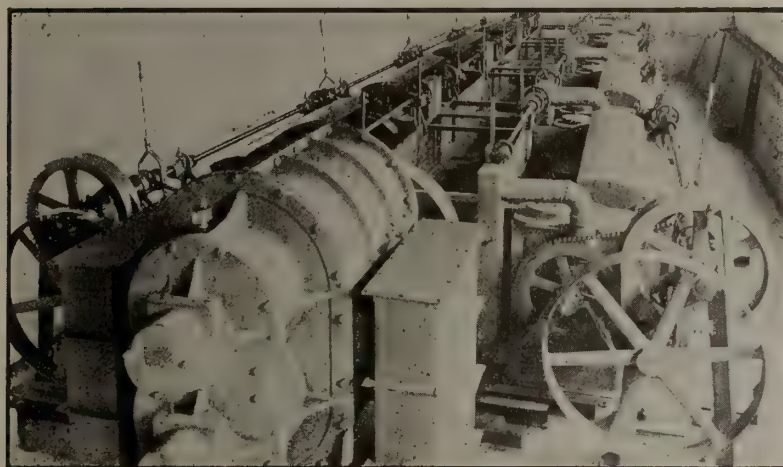
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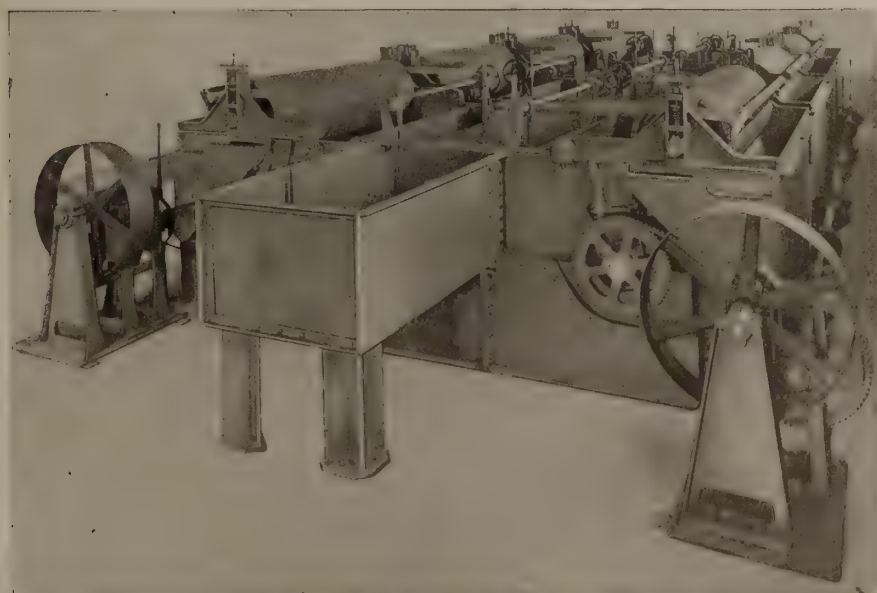
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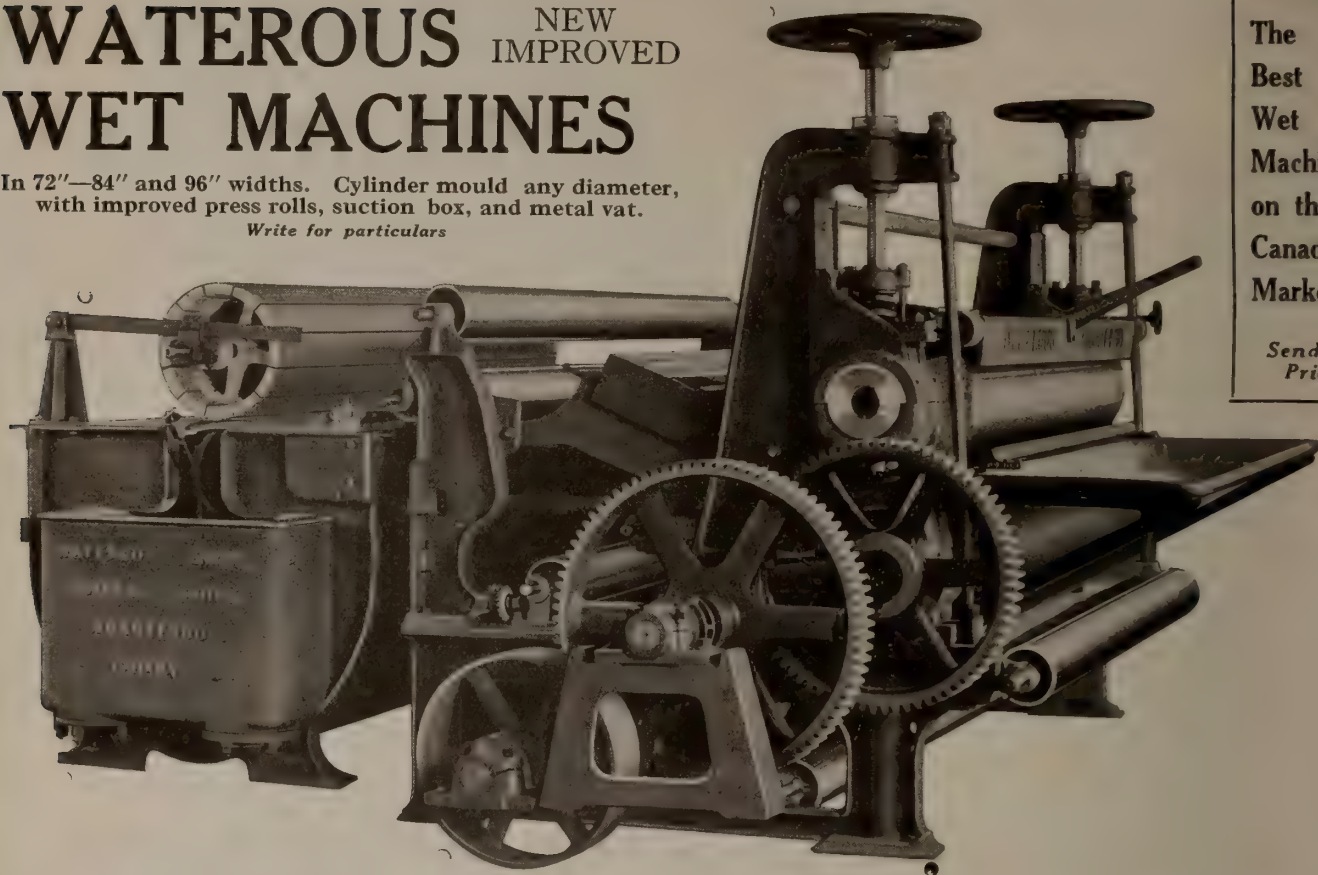
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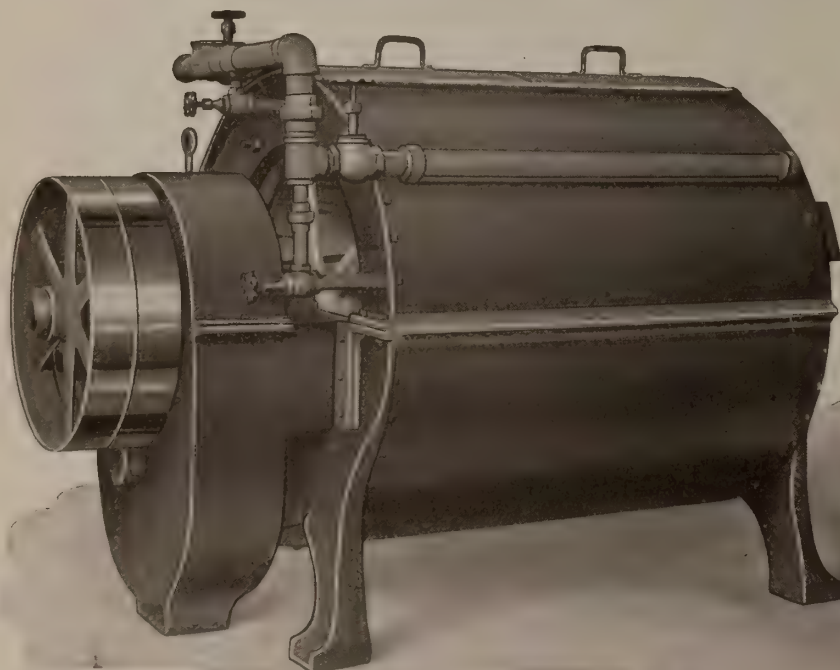
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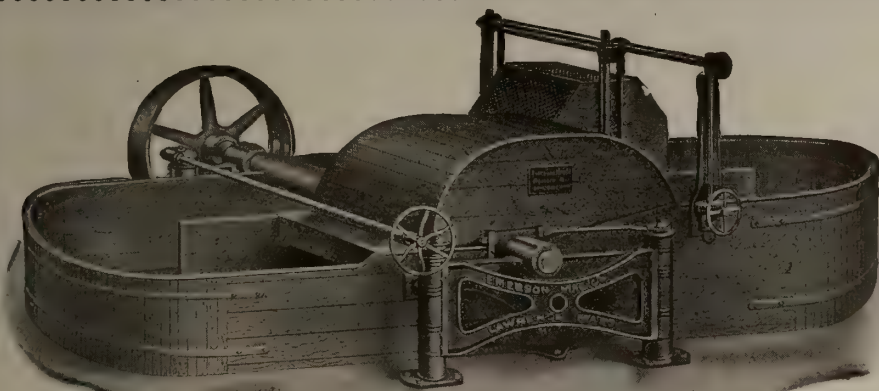
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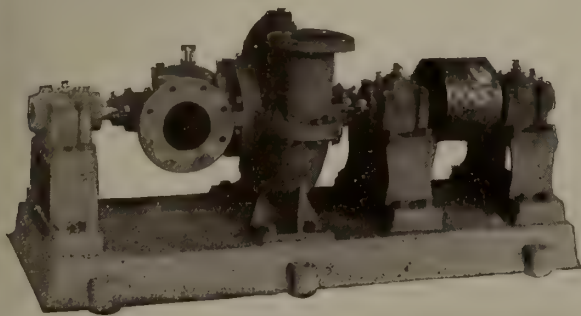
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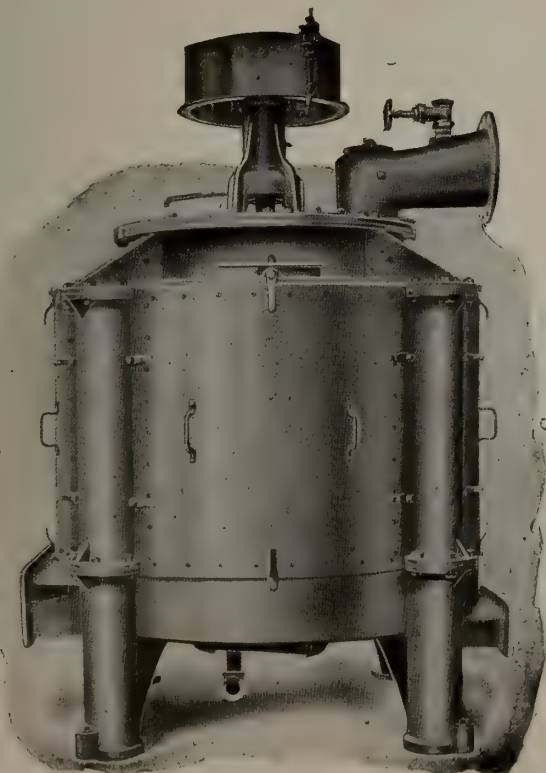
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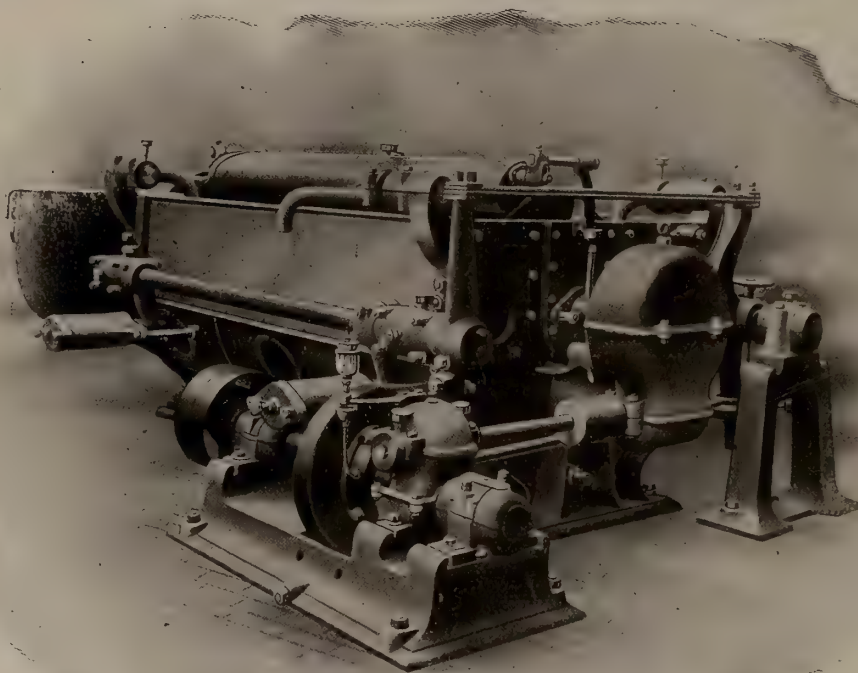
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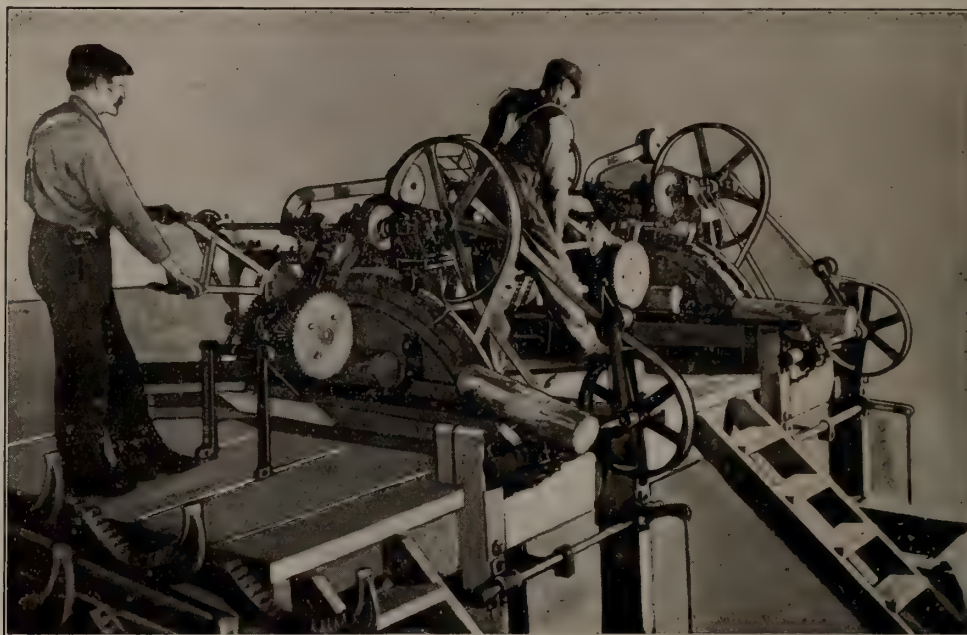
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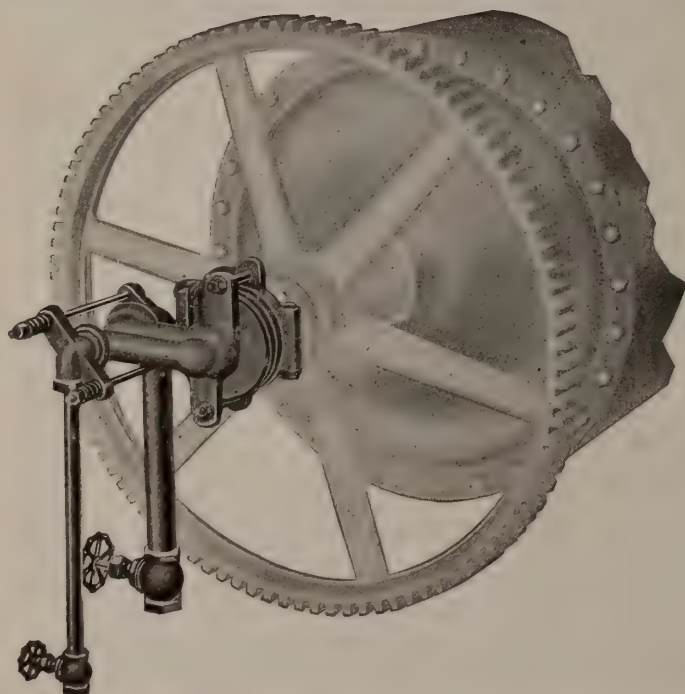
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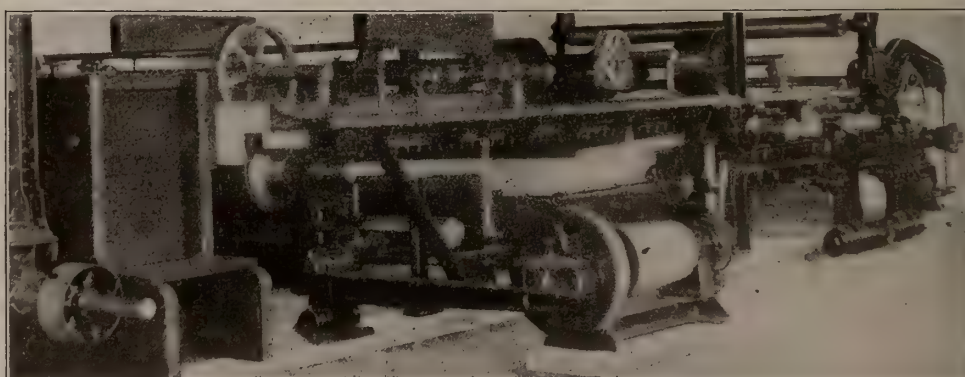
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*Official Journal of the Technical Section of
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VOL. XIII.

MONTREAL, AUGUST 1, 1916

No. 15

Pulp and Paper Magazine Opens New Department

The Pulp and Paper Magazine has pleasure in announcing that a Question Column will be opened in its pages in the next issue. Arrangement has just been completed with the Technical Section of the Canadian Pulp and Paper Association whereby the members of that committee and various sub-committees, such as the committee on Technical Education, the committee of Standards, and the committee on Literature and Statistics, will take charge of the queries sent to the paper.

The object of this new department is to make the Magazine of greater assistance to the superintendents, foremen, mill managers and technical men throughout the industry. It is hoped that anyone having problems or difficulties which they find hard to solve will communicate with the magazine. These questions and difficulties will be turned over to the committee, and questions and answers appear in a subsequent edition of the Magazine. To derive the maximum benefit from such a policy it is necessary that there should be the greatest possible co-operation between the men engaged in the industry. Questions and suggestions are invited from men in the mills. If a man has a difficulty the committee would be glad to have him state his trouble, while if he or anyone else has a solution for any difficulty, they would be glad to have that. By co-operation this department can be made a success and a benefit to all.

Significant Developments

During the past week several significant developments took place in connection with the pulp and paper industry of the country, all of which goes to show that increased prosperity characterizes the industry. The Riordon Pulp and Paper directors met and placed the common stock on a 4 per cent per annum dividend basis. The directors of the Canada Paper Company made a cash distribution of \$28.00 per share on their preferred stock, which called for a total disbursement of \$100,000. The Brompton Pulp and Paper Company of East Angus, Que., have just shipped 300 tons of paper to Greece.

These are only a few of the many changes indicative of the progress being made in connection with the pulp and paper industry in Canada, but are typical and serve as subjects for comment. It is highly significant when companies feel that they are sufficiently prosperous to inaugurate dividend payments on their common stock, as in the case of the Riordon directors, or to clean up deferred payments on their preferred, as in the case of the Canada Pulp and Paper Company, where they have paid back \$28.00 out of the \$42.00 per share which have accumulated as back dividends. The shipping of paper to Greece is a further indication of the aggressive methods being adopted by Canadian paper makers. They are not only holding their old markets, but going far afield and capturing markets which were formerly supplied by Germany, Sweden and other European countries.

In brief, the pulp and paper industry in Canada was never in so prosperous a condition as it is to-day, and the end is not yet.

Paper Prices to Advance

The Pulp and Paper Magazine is convinced that there will shortly be a phenomenal increase in the price of newsprint, sulphite, ground wood and other papers, and paper making materials. As present contracts fall due they are being renewed at figures which would have paralyzed the industry a year or two ago.

There are, of course, many reasons for this condition of affairs, and the irony of it all is that these causes are cumulative. The war, through the demands of the munition makers, has enhanced the cost of machinery and repairs to the same. Labour is taking its toll, the three shift day as against two shift of former times, meaning a large increase in wages. Mill felts, wires, and other "clothing" used in mills have shown enormous increases, while calcein glue, an important item in the manufacture of coated paper, has advanced several hundred per cent. Dyes are almost unobtainable at any figure.

In a measure, the very activities of the trade have reacted adversely upon the costs of commodities. For example, the United States exported 30,259,000 pounds of book paper in 1914; in 1915 a total of 44,674,000 pounds, and this year to date 85,000,000 pounds. All the exported paper is forever lost to the country, as paper making material, whereas a large proportion of the domestic consumption is used time after time. In other words, the greater the country's exports of paper, the more acute is her shortage of pulp.

Sulphite is one of the commodities which show a very marked advance, and the end of high prices for this commodity is far from being in sight. Before the war, unbleached sulphite was sold at \$1.90 per cwt. in New York, now it sells at \$4.50; while bleached sulphite in the same market has advanced from \$2.65 to \$7.00.

As pulp is purchased on the basis of 90 per cent dry and paper is sold on the basis of bone dry or 100 per cent, 10 per cent must be added to the above prices to find out the real cost of pulp as it goes into the beaters. There is quite a difference between 10 per cent of \$2.65 and 10 per cent of \$7.00.

The United States is unable to secure Swedish or German sulphite with the result that imports of this commodity are being rapidly reduced to the vanishing point.

The importations for the first five months of the year follow:

January	28,830 tons.
February	31,972 tons.
March	15,091 tons.
April	9,270 tons.
May	3,982 tons.

The following shows the importations for the past few years:—

1912	354,000 tons.
1913	373,566 tons.
1914	458,156 tons.
1915	394,321 tons.

and for five months of 1916 only 88,800 tons.

In addition to a shortage of sulphite the United States usually imported over 90,000 tons of rags, rope, bagging, old papers, etc., all of which has been shut out by out by embargoes, thereby adding to the problem.

The shortage of sulphite pulp and other paper making materials in the United States will mean much for the prosperity of our Canadian mills, especially those manufacturing sulphite. They are entering upon the most profitable period in their history, and will make more money in the next year or two than in any ten or a dozen in the past.

Power Plants

In this issue appears the first of a series of articles on the Water Power Situation in Canada. The Pulp and Paper Magazine believes that the series of articles will prove of immense value to the men connected with the industry, especially as pulp and paper men are among the largest users of water power in the Dominion. The articles have been prepared by a competent engineers and are furnished the Magazine through the courtesy of Mr. J. B. Challies, superintendent of the Water Power Branch of the Department of the Interior.

Newspapers Must Increase Selling Price

The inevitable result of the mounting cost of newsprint will be an increase in the selling price of newspapers. For many years newspapers were in an anomalous position. Many large metropolitan dailies which sold at one cent a copy depended solely upon their advertising for revenue. The one cent which was charged did not pay the white paper consumed in turning out a large twenty-four or thirty-two page paper.

This position of affairs was bound to reach a climax sooner or later. It does not seem like good business for a newspaper publisher or any other business man to turn out a product at less than cost. The manufacturer who sells his shoes, fountain pens or electric fixtures at less than it costs to make them, will soon find himself in the bankruptcy court. Newspaper publishers have been putting their papers on the streets at less than cost, depending entirely upon advertising to make up the daily deficit.

Already some of the larger dailies in the United States have increased the price of their papers from

one to two cents per copy, and many others are considering the advisability of adopting the same practice. Other publishers are trying to get around the inevitable by cutting down the size of their newspapers and effecting various other economies, but this will only postpone what must inevitably happen.

The publishers, in their turn, have accused the newsprint manufacturers of bringing about the increase of the cost of paper, but anyone in the slightest degree acquainted with the economic conditions affecting the newsprint manufacturer, must know that they are helpless. Everything which enters into the cost of making paper has gone up in price, whether it be labour, machinery, paper-making ingredients or the raw mat-

erial. In addition, the disorganization of the world's markets, the cutting off of the supplies formerly sent out by Germany and various other European countries, has created a scarcity of newsprint, and paper manufacturers would be scarcely human, and certainly not good business men, if they did not increase the price of their product. However, it has not been a case of choice with them, but of stern necessity and eventually it will be stern necessity that will compel the newspaper publishers to increase the price of their journals. In this, like in every other case, the public will have to pay more for what they want. It would not be at all surprising to see a universal change in the price of papers from one cent to two cents a copy.



MR. T. LINSEY CROSSLEY,
Chairman of Committee on Technical Education.



MR. O. F. BRYANT,
Chairman of Committee on Literature and Statistics.

To Conduct Question Department



MR. J. A. DeCEW
Chairman of Committee on Standards.

These three men together with Dr. J. S. Bates, chairman of the Technical Section of the Canadian Pulp and Paper Association will take charge of the question department established by the Pulp and Paper Magazine.

THE WATER POWERS OF CANADA, PROVINCE OF BRITISH COLUMBIA

G. R. G. CONWAY, M. Inst. C. E., M. Can. Soc. C. E., M. Am. Soc. C. E.

The Water Power Branch of the Department of the Interior is to be congratulated upon its enterprise in endeavoring to bring before the public a fuller knowledge of the vast water power possibilities of Canada. To stimulate interest in this subject the Branch has arranged an excellent exhibit of models and photographs of water-power plants in the Canadian Pavilion at the Panama-Pacific Exposition, and it has now supplemented this work by a series of excellent monographs upon Canadian water powers for distribution at the Congress of the International Engineering Societies which meets in San Francisco at the end of the present month.

In the monograph under review, which is a very comprehensive record of practically all the existing water power plants at present developed in British Columbia, it will be a surprise to many to read how much has already been accomplished in the development of the water powers of the coast Province. The author who, as Chief Engineer and consulting engineer,

has been identified with the construction of several of the largest plants in British Columbia, has fortunately in the preparation of his book, received the hearty co-operation of the engineers and managers of the various power companies, and has therefore been able to give a very complete description of the many interesting works that have been carried out during the last seventeen years, and has compiled a volume that will be a permanent record of what has been accomplished up to the present time.

Mr. Conway has prepared a very interesting table showing that already the installed capacity of turbines and impulse wheels amounts to 230,000 horse-power, of which amount over one-half has been installed during the past five years — a period that has seen such great expansion in British Columbia.

We reproduce this table as it shows clearly the development that has taken place and the uses for which the electrical energy is applied.

Capacity of the Principal Water Powers as at Present Developed in the Province of British Columbia.

Owner.	Situation.	Present Capacity Installed Horse-power	Purpose for which energy is utilized.
West Kootenay Power & Light Co., Ltd.	Kootenay River & Kettle River near Nelson	23,000	Mining, smelting, light and industrial power.
British Columbia Electric Ry. Co., Ltd.,	Goldstream, near Victoria	3,000	Light, industrial power and street railway).
British Columbia Electric Ry. Co., Ltd.,	Lake Buntzen, Burrard Inlet . .	84,500	Do.
Western Canada Power Co., Ltd.	Stave Lake, near Ruskin	26,000	Industrial power: (26,000 h.p. now being added.
British Columbia Electric Ry. Co., Ltd.,	Jordan River, Vancouver Island,	25,000	Light, industrial power & street railways.
Ocean Falls Company, Ltd.	Link River, Ocean Falls	11,200	Wood pulp and lumber man- ufacture.
Canadian Collieries (Dunsmuir), Ltd.,	Puntledge River, near Nanaimo,	9,400	Coal mining.
Powell River Company, Ltd.	Powell River	24,000	News-print paper mfrs.
Granby Consolidated Mining, Smelting & Power Company, Ltd.	Falls Creek, Granby Bay	7,325	Copper mining and smelting.
City of Nelson	Kootenay River, near Nelson . .	4,000	Mining, industrial power and light.
City of Kamloops	Barriere River, near Kamloops,	2,800	Light and industrial power.
Britannia Mining & Smelting Co., Ltd.,	Britannia Creek, Howe Sound . .	2,735	Copper mining and reduc- tion.
Hedley Gold Mining Company	Similkameen River, near Hedley,	2,650	Gold mining.
City of Prince Rupert	Woodworth Lake, near Prince Rupert	1,650	Light and industrial power.
Swanson Bay Forests, Wood, Pulp & Lumber Mills, Ltd.	Swanson Bay	1,250	Wood, pulp and lumber man- ufacture.
City of Revelstoke	Illicilliwaet River, near Revel- stoke	600	Light and industrial power.
Other small development described below		890	Mining, municipal & hotel lighting, salmon canning.
Total horse-power at present installed		230,000	



GRANBY CONSOLIDATED MINING, S M E L T I N G AND POWER COMPANY'S PLANT.



GRANBY CONSOLIDATED MINING, S M E L T I N G AND POWER COMPANY'S PLANT.

Conservative estimates have been made which place the total amount of water power that it is economically possible to develop in British Columbia at three million horse-power. So far, therefore, not more than eight per cent of this vast total has been utilized for economic purposes.

It is interesting to note how favorably the three largest cities in the Province, namely, Vancouver, Victoria, and New Westminster, are situated for hydro-electric power. These cities are at present supplied with water power plants having machinery installed amounting to 135,000 horse-power, equivalent to about 1 horse-power for every two persons forming those communities and the surrounding municipalities. In addition to this large amount of hydro-electric power, steam-electric auxiliary plants have been installed amounting to 26,000 horse-power. Mr. Conway also estimates that within easy transmission distance of those cities 750,000 horse-power can be economically developed—a fact that should have an enormous influence upon the building up of many new industries depending upon cheap electrical energy for their growth and expansion.

The development of hydro-electric power began in the coast Province in 1897 when the Bonnington Falls plant of the Kootenay Light & Power Company, which is situated on the Kootenay River near one of the great mining and smelting centres of British Columbia, was under construction, simultaneously with the construction of the Goldstream plant of the British Columbia Electric Railway Company, seventeen miles west of Victoria. The Bonnington Falls plant, constructed originally for supplying electrical energy to a small smelter in operation at Trail and for mining work at Rossland, was placed in operation early in the year 1898, while the Goldstream plant for supplying electrical energy to the city of Victoria was first placed in operation in September of the same year. It was not until December, 1905, that the Lake Buntzen plant of the Vancouver Power Company was placed in operation and Vancouver received for the first time hydro-electric power, although for several years prior to this

date a small steam electric plant had been in service to supply the citizens with light and power.

In the construction of many of the hydro-electric plants interesting engineering problems had often to be solved, particularly in tunnelling and dam construction. For example, British Columbia has several of the most notable dams for storage purposes in Canada, among them being the Coquitlam dam, constructed by the hydraulic fill process; the Ambursen dam at Jordan River which is the highest reinforced concrete dam in the British Empire; and the concrete dam at Stave Falls—all of which, with many others, are very fully illustrated in the monograph.

Another notable feature of many of the British Columbia plants is the high head that has been utilized. At the Britannia Mines, Howe Sound, this amounts to 1,915 feet, and at the Jordan River plant to 1,145 feet. At the latter plant, in addition to smaller units, a Pelton Doble impulse wheel has been installed of 14,000 horse-power capacity. This is one of the largest units of its type that has so far been built. At the new Power House at Lake Buntzen three 13,500 horse-power Pelton-Doble wheels have been installed under a head of 400 feet, while at Stave Falls, turbines of the Francis type, each of 13,000 horse-power, are operating under a head of 100 feet.

Mr. Conway's book goes fully into the details of the construction of the various plants, and also deals with the future outlook for industries. In the author's opinion British Columbia, with the advantages recently acquired through the opening up of new trade routes by the Panama Canal, could compete in the world's markets, particularly in such industries as the fixation of atmospheric nitrogen for the production of nitric acid and fertilizers; the smelting and refining of ores; the logging and canning industries, and in the manufacture of paper, pulp and newspaper.

Several chapters deal with the undeveloped powers of the Province, and full particulars are given regarding the administration of the water powers in the Province. Space prevents our quoting more fully from this interesting book, but among the subjects dealt with are the physical and geological characteristics of



WEST KOOTENAY LIGHT AND POWER COMPANY'S PLANT.

the Province; economic minerals; climate, and rainfall, and in connection with the subject of rainfall many interesting tables are given showing the wide variation of the rainfall throughout the Province.

The engineer, the capitalist, and all those interested

in water power plants will find the descriptions and illustrations in this volume very full and complete and it is hoped that its publication will stimulate capital to further investigate the possibilities of British Columbia for all classes of industry.



BRITISH COLUMBIA ELECTRIC RAILWAY COMPANY.



WEST KOOTENAY LIGHT AND POWER COMPANY'S PLANT.

IMPORTANCE OF ACCOUNTING IN PULP AND PAPER MILLS

By ROWLAND W. JOLLY.

A Realization of the Importance of Cost Accounting Has Awakened Considerable Interest Regarding This Subject Among Mill Owners.—Ideas Suggested by Some of the Most Prominent Accountants in the Industry.—The Wrapping Paper Manufacturers Association is Making Rapid Strides Towards the Perfection of a System of Cost Charges.

(Written Specially for the Pulp and Paper Magazine).

At the present time, the subject of cost accounting in the various paper mills throughout the United States and Canada, is receiving as much, if not more attention, than the problem of improving the product. While the installation of proper accounting systems is by no means a new feature for the paper or pulp mill, it is only recently that its many advantages are being generally appreciated. As early as 1900, there was a movement started by the American Paper and Pulp Association to formulate a standard system of accounting. At this time, the organizers of the movement, recognizing its importance, worked hard to achieve actual results. But it was in vain, for there was too much lack of interest to contend with. Until within the past year, there has been no real concentrated action on the part of the Association in this direction.

Now, however, it seems that the tendency is decidedly in favor of the general adoption of a suitable cost accounting system. In fact, most of the mills have already installed systems of this sort. However, the solution of the cost question by each mill individually has led to a great variance in ideas for the conduct of such a system. Hence, the means used by the majority of the mills for arriving at their costs vary considerably. Many manufacturers, because of certain convictions, are applying principles which are considered by other manufacturers as contrary to the general interest of the industry. For example, if a cost system is not properly conducted, it is possible that the manufacturers may underestimate the expense of production, and thereby be influenced to sell his product at a figure which is far below the market, thus injuring not only himself, but also each of his competitors.

There is to-day absolutely no question as to the necessity of a cost system in a paper or pulp mill. It is regarded by all in the industry as being of great importance. In fact, it is considered indispensable. Recognizing this, the manufacturers are now developing the idea that it would be wise to get together and confer and work out a plan from which would be evolved an ideal cost system, embracing everything. Thus far, the Wrapping Paper Manufacturers' Association has been doing everything possible to promote interest toward this end, among its members. H. H. Bishop, secretary of the organization, has been earnestly endeavoring to induce the constituents of the association to pay as much attention to the standard system of accounting as possible, and his efforts are being crowned with success.

For the past several months, committees of the Wrapping Paper Manufacturers' Association have been considering the question of costs. They have held

numerous meetings, and have discussed and debated the subject from every point of view, and are making remarkable progress. As a result of one of the meetings, a report was prepared by F. H. MacPherson, secretary of the Detroit Sulphite Pulp and Paper Company, and Dr. J. E. Campbell, president of the Dexter Sulphite Pulp and Paper Company, which discussed in detail, the question of depreciation, which is considered one of the most important problems confronting the manufacturer.

In this report, it was stated that depreciation, as understood in modern business, is the measure of exhaustion of usefulness by reason of wear and tear, obsolescence, inadequacy, decay, or other causes to a plant, machinery and other property assets. Depreciation was subdivided into three classes: first, through use, wear and tear; second, through obsolescence and inadequacy, and third, due to accidents. As the subject of depreciation is of interest generally, to manufacturers in every line of industry, it has received considerable attention at the hands of the committee.

Depreciation through use and wear and tear is explained as being a continuous depreciation which may be measured in any given line of business with a great degree of accuracy, principally as the result of the combined experience over a period of years of many manufacturers engaged in the particular industry. "This class of depreciation," reads the report, "can be arrested to some extent by the replacement of worn out parts of each unit of plant and equipment, but a time would inevitably arrive when each plant unit would require to be entirely replaced due solely to constant wear and tear through use." However, it is often necessary that many units of a plant be abandoned before they are completely worn out. This is due to obsolescence, and often to inadequacy. In order to keep pace with the growth of an industry, a concern finds itself in a position where it must have in its plant at all times, the very latest of modern machines and implements. Through this cause, it is common for machinery which is not worn out, and which is apparently fit for considerable usage, to be discarded. Especially in the present day, when so many plants are being enlarged, and capacities are being increased, it is found that certain apparatus is inadequate, so far as work under the new conditions are concerned, and it is therefore necessary to put these machines on the profit and loss sheet, under the head of depreciation.

Explaining depreciation due to accident, the report gives the following illustration: "An engine, boiler or digester may be wrecked, and with it other machinery which might, and probably would involve a considerable expense for renewals and replacements. A storm

or cyclone may work havoc with buildings, stacks, acid towers and unloading equipment or other plant units entailing replacement costs far in excess of those incidental to the ordinary maintenance of the property. All of these contingencies should be anticipated by the paper or pulp manufacturer, either by adequate insurance or by ample depreciation reserves provided against the contingencies in question."

So wisely has the method for determining the provision required for depreciation and the means of arriving at depreciation been calculated that it is worthy of quoting from the report of the Wrapping Paper Manufacturers' Association on this topic."

"Taking into account all of the causes of depreciation referred to a sufficient sum should be provided by charges into the operating costs of each enterprise so that the value of each plant unit will be completely amortized by the time that replacement is found to be necessary.

"This provision may be calculated in any one of three ways, viz.:

"(1) By the fixed percentage method. For example, if the life of the plant unit is estimated at 10 years, 10 per cent of the original value is charged off annually, or alternatively, a rate is ascertained which, when applied to the periodically diminished value, will reduce the book value to scrap value at the end of its estimated life.

"(2) By the Sinking Fund Method. That is the setting aside of such sum periodically as will, with interest accretions, equal the original value of the plant at the end of its estimated life.

"(3) By the production method. That is by charging an established rate per unit of output arrived at by determining the total annual depreciation required under the first method mentioned above and dividing such total by the normal annual tonnage of production. This will give the rate of depreciation per ton of product, which should be applied and included as part of the cost of production.

"The third method is, we think, the one which is particularly adapted to the pulp and paper mill business, and is recommended by this committee for universal adoption by the members of the association. The rate per ton of production will necessarily vary somewhat in different mills according to the local conditions and also to differences in construction cost of the various plants. It will, however, result in a very much more correct and uniform practice than is the case at the present time."

The above analysis is remarkably concise and should be found of great value in determining means of taking care of depreciation. It should always be understood that, in putting aside any sum of money toward a sinking fund, this sum should be the result of scientific calculation, and not be merely a specified sum.

Referring to the matter of repairs, it is suggested that under this head be charged; all current expenses which occur from day to day, and throughout the year in the general maintenance of the plant without renewing any substantial part of it. The head of repairs would include certain renewals of small parts such as would be necessary to continue the useful life of any piece of building, plant or machinery over the

estimated period of its life. Under renewals, should be charged expenses for materials or services which tend to extend the usefulness of the plant or machinery beyond its average time of life. Expenditures for improvements, which are made for the purpose of increasing efficiency of the plant to reduce future operating expenses without any actual increase in the production, should be treated as renewals and charged to depreciation reserves.

Too much stress cannot be laid on the proper consideration for depreciation in reckoning costs. At the present time, when the machines of the various mills throughout the United States and Canada are being operated at maximum capacity, it is reasonable to expect that the life of the various parts are necessarily being somewhat curtailed. For example, it might be wise to keep in mind the Fourdrinier wire. The wire has, under ordinary conditions, a certain period of life. But when the paper machine is run constantly without being allowed to cease operation for any long period, the life of the wire must be curtailed by the unusual wear to which it is being subjected.

Before going further to consider some of the other essentials in cost accounting in paper mills, we are reminded of an address, made by Clinton H. Scovell, at a meeting of the Writing Paper Manufacturers' Association, which was held some time ago, in which Mr. Scovell spoke of the importance of uniform costs for concerns engaged in the manufacture of the same kinds of articles. Mr. Scovell said: "You gentlemen, gathered here as an association of manufacturers, interested in a similar product, and therefore operating under similar conditions, I would urge the importance of reaching some common understanding as to what constitutes the cost of paper. Conditions in your several mills vary so much that the exact details of procedure which work with a high degree of efficiency in one mill will not be exactly suited to the conditions elsewhere. It is of the greatest importance to all of you, however, that you agree on the elements or fundamentals of a good cost practice; chiefly to make sure that all of the elements involved are included in your calculations, not forgetting interest on the investment, and an adequate provision for depreciation, as well as all the charges which you ultimately disburse through your cash book during the course of a year's operation.

"Selling policies based on a knowledge of costs determined by a uniform knowledge of costs determined by a uniform practice and adopted by an association of manufacturers would improve trade conditions to a remarkable degree. The most dangerous competitor is the man who doesn't know what his goods cost him. To those manufacturers who have already gone far in the direction of better cost accounting, I would urge that you consider the situation of the other paper mills in the country, and when an inquiry comes from them as to the advantages you have secured from a well developed cost practice in your own business, that you point out to them that your cost practice has enabled you to gain in efficiency and economical management because it has helped you to know more about your own business."

(Continued in next issue).

PURCHASING THE EQUIPMENT FOR THE BOILER ROOM

By HENRY BERT

(Specially Written for Pulp and Paper Magazine)

The object of these articles is not to specify in any manner the particular part of the building in which to locate the several departments, but has to do with the purchase and installation of such equipment as will properly constitute a well balanced, producing unit for fifty tons of box board per day.

It has, however, seemed advisable that in passing, a word should be said regarding the situation of the boiler and power rooms. As the heart is the most important of all the vital organs and the circulation of the blood the highest function of all the organs of the body and the source of life, so is the efficiency of the power plant and the utilization of its product the highest essential to the life and operation of the manufacturing industry.

The time has long since passed when the power plant was regarded of lesser importance as regards the location in the industry and was installed in the most convenient place. Now the unit is assembled around the power room. Let attention be given to the fact that this department should be given great care and consideration in fixing upon its location in the plant.

The determination of the equipment for this all important part of the unit is one of the greatest significance, and great care should be exercised that the equipment be modern and adequate to supply the demands made upon it. That an intelligent conclusion may be reached it is now necessary that the amount of horse power required to drive this proposed fifty-ton mill be known.

Operating under ordinary conditions it will be necessary that a total of one thousand indicated horse power be provided, distributed as follows: Beaters and jordans, six hundred and fifty indicated horse power; the variable speed engine to drive the board machine will require one hundred and fifty indicated horse power; to operate the constant speed engine, one hundred indicated horse power will be necessary and for the power to operate the pumps, lighting plant, etc., another one hundred indicated horse power must be provided. By indicated horse power is meant the power actually developed by the engine, regardless of builder's rating.

To furnish this one thousand horse power the number of boilers and the capacity of each must be arrived at. Assuming that the size of the boiler room will permit of the installation, let us decide upon providing four boilers of three hundred horse power each, builders rating, which will supply twelve hundred horse power without overload, or an excess of two hundred horse power over and above the actual consumption of the engines. It is now a proven certainty that greater fuel economy is present when the boilers are carrying an overload of from twenty-five to thirty-five per cent over the builder's rating. It is also an accepted fact that the loss of power from the boiler to the engine, is from fifteen to twenty per cent. To overcome this transmission loss in power it will be necessary that twelve hundred horse power of steam be generated to take care of the load upon

the engines, and three of these boilers carrying a twenty-five per cent overload will amply provide the steam required. The fourth boiler being held in reserve to be cut into the battery as occasion arises by reason of repairs, wash outs or other causes. By alternating the service of the four boilers as far as is possible, greater efficiency will be maintained, which means greater economy.

The boilers having been decided upon the next important item of expenditure is the furnaces with which to equip the boilers. The days of hand firing are passed and the automatic stoker is now recognized as an equipment necessary to economical operation. Most careful consideration should attach to the decision on this item and the large field of different makes should be thoroughly covered. Of particular importance in this matter is the grade of coal to be used in the stokers, as some are better adapted to use a certain grade of coal more economically than others and certain furnaces will be found better adapted to a coking coal of longer flame. It is a mistake to assume that while others are more suitable for free burning coal the furnaces will do the work under any and all conditions with any and all fuel. Better then, perhaps, fix upon the fuel and specify the furnace best adapted to consume it. The expense of a careful inspection of plants equipped with the various makes of furnaces will be money well spent.

It is also very important that the builders of the boilers and the furnaces be brought together and fully advised that the two are to be used together, thereby eliminating a great many problems which would arise in case each was ignorant of the others intention to furnish his part of the equipment. With each builder having full and detailed information regarding the equipment to be supplied, no excuses on the grounds of ignorance of details could be set up in case the installation would not perform to the standards laid down in the specifications.

Boiler room conditions have been observed under which a three hundred horse power boiler was being fired by a two hundred and fifty horse power furnace, and vice versa. In the first instance, using a two hundred and fifty horse power furnace with a three hundred horse power boiler, there will be such a drop in the temperature between the baffles that the gasses do not burn among the tubes which causes dense smoke and therefore a loss in fuel. In the latter case using a three hundred horse power stoker in connection with a two hundred and fifty horse power boiler, the furnace will be crowding the heat through the boiler so that the gasses will burn in the smoke stack, causing too high a flue temperature, clouds of smoke and is also a waste of fuel.

A large difference will be noted in the rules followed by the different boiler makers as to the number of square feet of boiler surface that is exposed to the heat, necessary to produce a certain horse power. Some builders require eight square feet to the horse power, while others require as high as fifteen square feet to the horse power.

Assuming that a three hundred horse power boiler and a three hundred horse power furnace are to be purchased, the following specifications should be indicated. In the average water tube boiler eleven square feet of heating surface will produce one horse power. The three hundred horse power boiler will therefore have a heating surface of three thousand, three hundred square feet. The ratio of the heating surface to the grate surface is thirty-six to one, or in other words there will be thirty-six square feet of heating surface to each square foot of grate surface. Dividing this three thousand, three hundred square feet of heating surface by thirty-six gives us approximately ninety-two square feet of grate surface which is necessary for the three hundred horse power furnace.

Next in order to the boilers and furnaces is the purchasing of the coal conveying apparatus with which to furnish the coal to the furnaces. Such a large number of different types of conveying machinery is offered to the market that it is a difficult matter to decide upon just which particular one is the best as they are all very well presented from a talking point of view. Practical experience had proved that very few will deliver the coal consistently and economically. All modern plants now arrange for the storage bin under a trestle work, over which the cars are run and by using hopper bottom cars, the contents are unloaded quickly and at small cost. Assuming that this is a feature of the proposed new plant, a bucket conveyor system is to be preferred, having the furnace supply bunker over head. This system can be so arranged to handle the ashes as well as the coal. Care should be taken to see that the coal conveying system is of such capacity that there will be no question as to its ability to provide a sufficient quantity of coal to the furnaces. The average consumption of coal for steam boilers is twelve pounds per hour for each square foot of grate surface and by using these figures as a basis, the approximate amount of coal required per day can be easily arrived at.

In modern plants each furnace is equipped with a separate automatic scale hopper, through which must pass all the coal consumed by the particular furnace which it serves. This will show at any and all times the amount of coal that is actually being consumed by any boiler at any time. In connection with this arrangement it is necessary that separate water meters be supplied to each boiler. This will indicate at any time the quantity of water used by the boiler as well as the amount of evaporation each boiler is performing and any efficiency detected at once. Should any boiler fail to show a performance equal to the others it may be cut out of the battery, the trouble located and removed.

Other equipment is a matter largely in the hands of the owners and must be left to them to decide as to what extent the purchase of other instruments of record should be carried.

In following articles will be shown diagrams, steam charts, CO₂ recorder charts, draft reading and smoke charts which will be of interest in demonstrating the economical operation of the boiler room.

The next article will have to do with the purchase of the steam engines and piping equipment.

Canada Paper Company Pays Back Dividend

The directors of the Canada Paper Company have just declared a cash dividend of \$28 per share and the preferred stockholders of the company are that much richer.

More than two years ago the company, having worked into a position that would permit of regular dividend payments, offered a lump sum in payment of the arrears that had been accumulating over a number of years. The offer was readily accepted by about 90 per cent of the shareholders, but for a long time the remaining ten per cent some of it stock tied up in estates failed to give its acceptance to the compromise. It was only in the early part of the current summer that the directors were in a position to put the plan in operation, and a cash declaration of 28 per cent was then made. Following that, 3 1-2 per cent was paid for the half year to June 30th, making a total payment of 31 1-2 per cent to shareholders in a very short time.

The dividend arrears settled by the 28 per cent distribution totalled 42 per cent, or the deferred dividends of six years.

Canada Paper Company is one of the oldest manufacturers of newsprint in Canada, and the final clearing up of its dividend position is interesting at this juncture, when the paper industry appears to be straightened away on a career of unusual prosperity. The company is a close corporation, and publishes no financial statement. Its securities, however, are in the hands of a representative group of financial and commercial interests. Mr. J. Gilgour, of Toronto, is president and the other directors are Sir Montagu Allan, Sir H. S. Holt, C. R. Hosmer, F. W. Molson and Hon. Robt. Mackay.

The cash disbursement of \$28 per share calls for about \$100,000.

LAURENTIDE MEN AT THE FRONT

Capt. J. H. A. Acer, of Laurentide, Limited, is busy recruiting a machine-gun section among his former employees at Grand Mere and is meeting with a very satisfactory response. The employees of the Laurentide Company have done remarkably well in the matter of enlistments. In addition to the number previously reported in the honour roll of the Pulp and Paper Magazine, the following additional names must be added: Charles Art. Lacroix, George Elie, Alf. Johnson, Fred Gingrass, Earl Roberts, "Scottie" Purdie, J. Cote, Charles Keeling, Len Lloyd, Bert Brooker, Tom. Boyd, Eugene Lavalley, Will Howlett, Jas. Rathbone, Frank Lane.

The Laurentide Company have a large number of men at the front, many of whom have been giving a good account of themselves.

Cyril Dickson, a younger brother of Gerald W. Dickson, has been made a corporal. He took part in the defence of the Ypres Salient with the Fifth Canadian Mounted Rifles, who were badly cut up and as a result of the good work he performed there has been made a corporal.

James Stanley Scott, a former employee of the Laurentide Company has been awarded the Military Cross for aviation work.

PROGRESS OF THE INVESTIGATION OF THE NEWS-PRINT INDUSTRY

THE FEDERAL TRADE COMMISSION WILL HOLD A HEARING IN WASHINGTON, ON AUGUST 1, AND HOPES TO COMPLETE ITS WORK IN THE NEWS PRINT INVESTIGATION BY OCTOBER. — QUESTIONS HAVE BEEN SENT OUT TO THE VARIOUS NEWSPAPER PUBLISHERS, REGARDING DETAILS OF PURCHASES, ETC.

Special to Pulp and Paper Magazine.

New York, N.Y., July 24, 1916.—Further attacks have been made on the news print manufacturers within the past few weeks, for despite the efforts to curtail consumption, the news situation has been growing more acute and the prospects for the market are now almost alarming.

In the meantime, the Federal Trade Commission is conducting its investigation of the industry. Announcement has just been made that the commission would hold a hearing on August 1. This announcement was made in a statement given out on Saturday of last week, reading as follows:

"The Federal Trade Commission, in connection with the investigation ordered by the Senate, to determine whether there has been an undue increase in the price of news print paper, will have a hearing in Washington, on Tuesday morning, August 1, at 10 o'clock, at which all interested parties are invited to appear.

"The commission has addressed a letter to practically all the newspapers of the country, requesting them to be represented at this hearing. Those who cannot appear, but have information they desire to submit, are urged to do so in writing.

"Schedules containing numerous specific inquiries, as to the prices paid for print paper, the quantities procured, and other facts bearing on the inquiry, are being sent out to the publishers of 2,000 daily newspapers and more than 4,000 weeklies. Any publisher not receiving a copy of this schedule is requested to apply for one, if he has information that will be of value to the commission.

"Special agents of the commission are now at work examining the accounts of the principal manufacturers of print paper in the United States and Canada, to determine the cost of production, profits, terms of sale, and other pertinent matters. Other investigators are seeking information from jobbers as to their purchasing and selling prices; the extent of the increase, if any in the foreign demand for news-print paper; and whether or not existing war conditions have affected imports of wood pulp and of print papers.

"Based on this information, the commission will reach its conclusion and formulate a report to the Senate in response to its resolution directing that the investigation be made. Every man who can be advantageously used on this work is being employed in order that it may be completed at the earliest possible moment. The co-operation of all parties interested is not only desired, but earnestly requested. The commission expects to be able to make a report by October 1 at the latest."

Whether or not the commission will be able to complete its work in this time is problematical, for its task is a tremendous one. The news-print manufacturers

are doing all in their power to help the investigation, confident that its results will clear them of the many accusations which have been made recently.

The questions which the newspaper publishers are being asked to answer have attracted much attention. They are divided into two schedules, A and B. Schedule A, which was sent to newspaper publishers, including Sunday, daily, weekly and monthly, reads as follows:

1. Name of publisher, name of paper and location.
2. Daily, morning, evening, Sunday, weekly; designate any other edition.
3. Contract purchases. Give details of all contracts made for the purchase of news-print paper since January 1, 1913.
 - (a) Name and address of seller. If a selling agent or jobber, state also name and location of mill from which deliveries were made.
 - (b) Tons of news-print paper contracted for.
 - (c) Date of contract and period covered.
 - (d) Price per 100 pounds.
 - (e) Discounts and allowances per 100 pounds.
 - (f) Terms of delivery, i.e., whether f.o.b. mill, sidewalk delivery, etc.
 - (g) Contract specifications regarding size and weight.
 - (h) Tons of news-print paper received by months under the above contracts since January 1, 1913.

Note:—Where possible, furnish copies of contracts in connection with your answer to this question.

4. Market purchases. Give details of all purchases in the open market of news-print paper since January 1, 1913, stating for each purchase:

- (a) Name and address of seller.
- (b) Pounds of news-print paper purchased and pounds received.
- (c) Price per 100 pounds.
- (d) Discounts and allowances per 100 pounds.
- (e) Terms of delivery, i.e., f.o.b. mill, destination, etc.
- (f) Specifications regarding size and weight.

5. State (a) the usual quantity of news-print kept in stock, (b) the quantity in stock July 1, 1915, and (c) the quantity in stock July 1, 1916.

6. Give in detail reasons for any increase in the consumption of news-print paper by you, especially during the year, specifying whether it is due to increase in circulation, in average number of printed pages per issue, or what.

7. State reasons given by the seller or others for any increase in price of news-print paper. Answer fully, furnishing copies of correspondence, etc., if possible.

8. State the average number of agate lines of advertising printed in the months of January, March, May and June, both of 1915 and 1916.

9. Give particulars regarding any instances where manufacturers or jobbers have refused to give you or other publishers a quotation on news-print paper, furnishing copies of correspondence, etc.

10. It has been alleged that there is or has been since January 1, 1913, an understanding among the news-print manufacturers in respect to the apportion of sales or the fixing of prices. Furnish any facts in your possession bearing on this matter.

11. What is your percentage of white waste, of printed waste, and what have you done to conserve waste? If you have cut off returns, state what the percentage of saving has been.

12. Give particulars regarding increased price of paper other than news-print used by you.

Schedule B contains the following questions:

1. Name of paper.
2. Frequency of publication.
3. Do you use roll or sheet papers for news-print?
4. State average circulation during the month of June, 1916, and what the increase or decrease in circulation has been since July 1, 1915. State average number of pages in regular issue and measurement of outside edges of pages.

5. Give names and addresses of manufacturers or jobbers from whom you have purchased news-print paper since July 1, 1915.

6. For each lot of news-print paper bought for prompt delivery since July 1, 1915, give the date of purchase, quantity purchased, and price per hundred pounds or other unit of quantity specifying size and weight.

7. For each contract or purchase for future delivery of news-print paper or patent inside or outside since July 1, 1915, give date of contract, total deliveries on the contract and price per 100 pounds or other unit of quantity specifying size and weight, and indicating for each contract whether paper purchased is patent inside or outside and whether it contains advertising.

8. How large a stock of news have you been accustomed to carry on hand?

9. What is your present stock of news-print?

10. State reasons given you by seller for any recent increase in price of news-print. Give full particulars, copies of correspondence, etc.

11. Do you know of any facts which tend to dictate any agreement among manufacturers or jobbers in any way affecting the price of news-print paper? Give full particulars with copies of correspondence, etc.

12. Give particulars regarding increase in price of paper other than news-print used by you.

It is hoped that a large percentage of the newspaper publishers will answer these questions.

R. W. JOLLY.

AMERICAN BAG AND PAPER CO.

The American Bag and Paper Company at Hudson Falls, N.Y., which owns a controlling interest in the Canadian Union Bag and Paper Company, is commencing to show an improvement in business. This company has recently made a cut in its capital stock, the common being reduced from \$18,000,000 to \$2,000,000, while there has also been a cut made in the preferred, upon which five years' dividends are in arrears.

Consumers Must Pay Higher for Canadian Supplies

By CYRIL T. YOUNG,

(In charge of Ontario and Quebec Land and Timber for the Canadian Northern Railway System in Canadian Forestry Journal).

The following article, prepared on request by Mr. Young, is a militant call for protection of our Canadian timberlands from every form of waste. Mr. Young has gained a close and accurate knowledge of the forest resources of Northern Ontario and Northern Quebec from Lake St. John through to the Manitoba boundary, and from the Ottawa River and the Great Lakes through to James Bay during his twenty-two years of field experience and subsequent contact with transportation interests.

If, as Mr. Young declares, the consumer must pay more for his paper and the paper mill must spend more cash on the raw supplies of pulpwood from the Canadian forests, then must follow a higher valuation on spruce and balsam and other pulp producing areas rendering their protection and perpetuation a matter of greater urgency on governments and limit holders. —Editor.)

The same awakening is coming to us later on our pulp wood area as we received in our high-class white pine area a few years ago; and American mills are now going far afield for their wood, one rail haul delivery for this winter being 846 miles, and quite frequently 700 miles. This is due not only to the constant erection of more mills but to the increase in the capacity of mills already erected on the American side. To date it has been the short log haul and easily driven timber and the 13 to 16c. rate wood that is reaching these American mills. Supplementing this rail haul timber is the St. Lawrence and Anticosti wood which before the war was reaching points as far west as Erie on a \$2.00 per cord boat rate prior to the present scarcity of bottoms and also though a much less quantity of Nipigon, Port Arthur, Knife River wood reaching Erie ports at the same figure or towed to Ashland on Superior and getting into Green Bay section by rail haul from Ashland South.

Lake Shipping Scarce.

The European conflict has not only affected shipments of pulp from Norway, Sweden and Russia, but the removal of the bottoms from the Great Lakes for either Transatlantic or coastwise trade has resulted in making Great Lakes delivery of pulp wood practically impossible in cost, except to the mills who own their own vessels and their loading and in some cases discharging equipment. This is resulting in increased demands—very strong at the present time—for rail haul wood from settlers' lands and patent lands in Northern Ontario and Northern Quebec, which can be exported to the American mills, and when bottoms can be secured this applies to New Brunswick wood as well.

Export wood like timber must inevitably go higher due to the scarcity of labor in Canada from enlistment and the demand from war industries which men find more congenial to home life than the woods employment affords. Added to this is the increased cost of barking plants, saws, boilers, chain, rubber and leather

elting, etc., several of which have gone up from 55 per cent to over 100 per cent.

Increased Paper Prices.

The final solution does not lie in cheaper Canadian wood or decreased cost of transportation, but in increased paper prices during the period of the war, and as month after month passes without positive results, two or three or more years' war is not at all improbable. Canadian pulpwood operators selling to American mills are not now making any more money than heretofore and are taking immensely larger risks unwarranted by the profits obtainable. Personal friends of mine are operating all the way from the head of the lakes through to St. John and have made less money and some of them more debt within the past eighteen months than at any other period of their pulpwood operation. Many of the operators have had to close out entirely, and this is bad for the reason that in any business if the stream of consumable goods is steady economic life goes on smoothly; if for any reason the stream is interrupted more or less serious consequences always ensue. Operators should go further in insisting on financial assistance from the buyers, for these mill owners know that there is no greater help to legitimate business than well regulated and easy flowing credit.

Forests Unlimited?

Nor is the quantity for future supply to these American mills up to 19c. rate by any means unlimited. Most convincing, indeed, is a map showing the pulp concessions granted in Ontario and Quebec, and if to these could be added those that will likely yet be granted on five good pulp and paper mills sites remaining in the North the result would be more so. Mill sites to manufacture the wood growing north of the National Transcontinental are impossible except at Lac Seul and none on the Nelson on the Hudson Bay line. I might also possibly add one on the upper waters of the St. Maurice above La Tuque. All the other waters are flowing north and will not be intercepted by steel within a quarter of a century.

Looking away to the future because some of our Canadian mills are yet going to have to go as far afield for their wood as the American mills, who are rail hauling 600 miles, are doing to-day, it would be well here to state frankly that there is no commercial timber for a hundred miles south of the waters of James Bay on the territory known as the James Bay Basin.

Only Near River Banks.

Many Canadian and American mill men have the idea that because they are told spruce is growing on the banks of the Albany, lower Matagami, Moose, Hurricanaw and Nottaway that Northern Ontario and Northern Quebec is all timber country. If they were to get out of a canoe and travel inland for days as I have done, not only below the last portages going down to James Bay, but away up on the rivers sometimes even south of the National Transcontinental, they would find merchantable timber does not exist back from the river banks. This is true of an immense area around Lake Mistassini, north and west of Lake St. John, where heavy fires have occurred, on across the Hurricanaw and Moose—on past Martin's Falls (the only fall in 300 miles of navigation on the Albany), and I understand from Indians on

through Patricia to Port Nelson, for all this lowest bench of land is practically muskeg.

A Question of Accuracy.

It is all very well for reporters to turn up Departmental records of Northern Exploration of 1910, showing 288,000,000 cords of spruce in the then explored section of Northern Ontario, but is it there out on the ground? It certainly is on the better sections of the Northern Clay Belt, such as Temiskaming, Abitibi and parts of Mattagami, Kapuskasing and Missinabi, but I personally know large sections grossly overestimated at forty-five cords to the acre that cannot possibly cut more than four to five cords to the acre on the average. Spruce mixed with pine is sometimes quite deceiving and certain pulp areas further south estimated at ten cords to the acre average are to-day actually cutting out less than two cords to the acre.

Returning to the immediate question and summarizing: Woods labor will be seriously acute by November 'st—wholesalers refuse to even guess where provision prices will reach—and equipment is proceeding skyward steadily.

Paper to Soar.

Before the termination of the war you will see "News" selling closer to \$40.00 N. Y. delivery than the \$25.00 now quoted, for even at present many of the mills have no reserve supply of wood, and everywhere the stock of "News" is getting very low, notwithstanding the fact that we are not yet in the low water period affecting the grinders and output. Our cheaper jack pine and poplar woods should be more utilized in Krafts and wrapping paper and then the logging of all timber together would cheapen spruce wood costs. With South America, Asia and the entire Continent of Europe in urgent need of pulp and the public (with extra coin in their pockets with a false prosperity due to national loans) buying more war extras than they really require why should they not pay the cost of increased material—pulpwood?

ABITIBI PLANT SAFE.

According to the latest information received by the Abitibi Power and Paper Company, their plant at Iroquois Falls in Northern Ontario escaped the holocaust which swept over Northern Ontario and caused the loss of nearly two hundred lives. The plant is running to capacity, and it would be extremely unfortunate if anything were to happen to it.

BIG ORDER FOR BRUSH BACKS.

There is at present a great shortage of dowels, skewers and small manufactures of hardwood in England and prices have advanced materially. An order for one million hardwood backs for brushes has just been placed in Ontario.

PULP LIMIT FOR SALE.

The Editor of the Pulp and Paper Magazine has received a communication from a friend asking to be put in touch with prospective buyers of a valuable Canadian pulp limit. A display advertisement in regard to the matter will appear in the next issue of the Pulp and Paper Magazine, but in the meantime any inquiries sent to the Editor will be forwarded to the interested party. Now seems to be the opportune time for papermakers to locate north of the 49th Parallel.

The Print Famine

The Appleton Daily Post, Appleton, Wisconsin.

The 1 cent newspaper will be a thing of the past within a short time, predicted Secretary of Commerce William C. Redfield on Tuesday. Prices have increased all along the line on nearly all commodities, and within the last few months there has been a steady increase in the price of the materials entering into the making of news print paper and an increased demand for paper.

From information which has reached me, I am of the opinion that advertising rates will have to be increased also, as it appears that the increased cost of paper can not be made up alone by the increase in the price of the newspapers.—Washington dispatch.

Evidently Secretary Redfield is under no such delusion as that of some newspaper publishers, that the present prodigious increase in the price of news print paper is due to wicked and illegal conspiracy on the part of the paper manufacturers. He acknowledges in effect that the increased price of paper is due to the increased cost of raw materials entering into paper and the greater demand for paper itself.

The greater demand for paper comes not only from this country but also from abroad. The increased demand from this country alone would be sufficient to account for a large increase in price, but on top of that is the fact that such manufacturers of print as are left in the United States could, if they would, sell their entire output abroad. Australia, the South American countries and other countries that have been accustomed to buy their paper from the countries now at war, find it impossible to get paper longer from these countries, and having no facilities for supplying their own requirements, they are coming to the United States and asking to be supplied here. Nor are they getting all the paper they want from the United States, for the mills of this country are disposed to protect local customers first.

But as Secretary Redfield says, the demand for paper is only one of the factors making for increase of paper prices. The other factor is the high price of raw materials. This comes not only from the greater demand for raw materials caused by the greater demand for paper, but also from the fact that many foreign sources of raw materials are now closed to American paper manufacturers. The result is that many American paper manufacturers are themselves now between the devil and the deep sea, in spite of the tremendous price of print, which does not compensate them for the shortage and high cost of raw materials. In fact some of them are facing an actual likelihood of being forced to shut up shop or reduce output for lack of stock to make paper from.

The fact of the matter is, as the Post has so many times before remarked, that the United States print paper industry has practically been transferred to Canada, through unwise tariff legislation, Democratic in its spirit, though some of it a Republican congress was responsible for. The newspaper publishers are now reaping the whirlwind. They called for cheaper print paper and argued that if Canada could make print paper for less money than the United States she ought to be encouraged to do it, so that they might buy it from her. Intimidated Republican and Demo-

cratic congresses listened to them, and took the tariff off of print. The result is what might have been expected, the United States print paper industry has been killed off, and the publishers now, when emergency arises, find themselves at the mercy of foreign (Canadian) manufacturers, who will screw out of them, relentlessly, every last cent and fraction of a cent that the traffic will bear.

If print paper and its raw materials had been given continued tariff protection the sulphite mills and print paper mills in this country would have increased sufficiently to keep pace with this country's demands for paper, and when the present pinch came the paper industry of this country would have been prepared to meet it. As things are won there is no possibility of the industry's meeting the pinch, in fact even at present prices, United States' print mills are continuing to go on to other grades of paper, which promise better present and future returns upon their investment.

What would happen to the newspapers of the United States if Canada, either on her own initiative or Great Britain's, should put an embargo upon the export of print paper to this country? Newspaper publishers who have thought of this possibility are warranted in lying awake nights.

NEWSPAPER COSTS.

Few readers of newspapers are aware of the increased cost of newspaper production since the outbreak of the war, yet no other line of business has suffered so heavily. The following table gives the advance in prices of materials most commonly used in producing newspapers:

	Advance Per Cent.
News print	16
Other paper	58
Ink (black and colored)	40
Stored metal	50
Press rollers	33 1-3
Press blankets	15
Stereo paper	47
Postage	33 1-3
Twines	52
All stationery	25

This does not take into account the advance in the cost of news-gathering (which has been enormous) nor in other expenses which go to make up the newspaper's budget. Take the illustrations, for instance. The materials used in making process engravings for newspaper illustrations show the following advance:

	Per Cent Advance
Copper	66
Zinc	400
Nitric acid	89
Bromide potassium	1,500
Sulphate copper	300
Metol	1,600
Benzole	380

The newspaper publisher has also had to stand his proportion of the general advance in the price of labor.—Winnipeg Tribune.

The Business Concerning Rags and Paper Refuse

Translation from "Sven Pappers-Tidning" by News-Print Manufacturers' Association.

The fact that waste paper in Sweden of late has become considerably more expensive than formerly and the supply so short that it has caused an export embargo, as well as the likewise increased difficulty of procuring certain kinds of rags for the better qualities of paper, have brought the writer to think of the Swedish trade in rags, the organization of which is far from being the best.

During the last 30 years it has many times been requested that efforts be made that rags and waste paper should be collected and utilized in a rational way profiting the economy of the country and providing opportunity for increased earnings. It is an established fact that in proportion to the population, rags and waste paper are preserved in a much lesser degree in Sweden than in other countries, and it has been estimated that in this manner several millions are lost to the country which otherwise might have been saved.

A gentleman, well known in his day within large circles of industry and business men, but now dead for some years, a writer in the "Goteborgs Handels- och Sjöfarts Tidning," Mr. M. Rubenson, called "The flyer," who in those days wrote about industry questions in Sweden, and visited all the exhibitions and industry conferences as reporter, wrote in the "Handels-tidningen" in the 'eighties or 'nineties about the rag trade, after having studied conditions in Holland and Germany. He also, by personal agitation, endeavored to bring about a rational collecting of rags and a substantial rag business, being convinced that in this manner the country would derive a great national economic profit. But he did not succeed in arousing sufficient interest for the question for bringing about actual results, and he complained many times thereof to the undersigned.

It is beyond doubt that an expert and well managed rag business with suitable arrangements for the collection of rags and waste paper, would be a very lucrative business. In times past, I had an opportunity to learn about the rag business, not only in Sweden but also in Denmark, Germany and Belgium. On the basis of what I then learned, combined with my experience of how the rag business was managed in Sweden, and of the difficulties the Swedish paper mills had in procuring just what they needed, and how rags were exported from Sweden to return in a sorted condition, etc., I more than once thought that if I had the necessary personal qualifications for managing a rag business, I could by that means much easier than as a paper maker arrive in good circumstances and become independent. In my childhood I heard about a distant relative, who through speculations abroad had become rich, then bought the Kaggeholm estate at the Malaren, lived like a prince, among others had King Karl XV. as his guest and afterwards went bankrupt. He decided to become rich once more, and for that purpose started a rag business, but in France and Belgium. He succeeded within a

comparatively short time to get rich again, but he did not return to Sweden with any money.

Especially in regard to paper refuse, a considerable amount could be collected for instance in Stockholm, if arrangements were made for regular collecting from offices, establishments and greater private families, if the collectors saw to it that the caretakers got a suitable reward for taking the trouble of saving the waste paper.

I, for my part, am burning up the waste paper, and that is a way which during the past winter has resulted in saving expensive fuel.

Toward the end of the 'nineties, I wrote a couple of times in the greater daily newspapers about how a rag business should be managed, but without any visible results and the question has also been aired in the Pappers Tidning. At times there has been some talk about the starting of a practical rag business, but as far as I know nothing has come of it.

Now during the times of war many experiences have been made; among other that it is necessary to take care as much as possible that different industries have a supply of raw materials and necessary requisites within the country. Quite enough of rags and waste paper for the needs of the country could be had in Sweden, if it only was saved.

However, it must be said that the supply of waste paper in Sweden during the past years and before the war has been abundant and the price rather low. The consumption thereof within the country neither was so great that all of it that was collected was used, and the surplus was exported. The Street Cleaning Department of Stockholm, for many years has exported from the collecting centre at Riddersvik all the waste paper collected in the city.

It is not only exports which during the last year decreased the available supply of waste paper in Sweden and caused the rise in price. A paper mill now under construction in Västervik has bought large quantities of waste paper.

In Germany, where the demand for waste paper is, or at least has been, for some time greater than the supply, a patriotic collecting of paper has been arranged, under the name of "Reichs Papier Wochen." The profit from the sales of collected paper has been turned over to the "Red Cross" or is used for other philanthropic purposes, and the results seem to have been fine. Thus, during one week's collecting in Hirsberg, and Cumersdorf, 72 short tons of paper were gathered, which in selling brought \$1,704.56 pretty well paid.

In the United States there now exists a great scarcity of rags and waste paper. Formerly great quantities of rags were imported from Europe. This import has been stopped by the war. A great movement is now under way in the United States to induce the people to save rags and waste paper for the use of the paper mills. For this purpose, pamphlets and circulars are distributed even through the post offices of the country. A couple of years ago an association was formed in the United States: "The National Association of Waste Material Dealers," which has met with great success. At the annual meeting lately held in New York, a delegation from the makers of writing paper was present in order to arrange for co-operation in the search for rags and paper refuse.

A. MUNTZING.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, July 31st.

The Ideal Coated Paper Company has awarded a contract for the building of a mill at Brookfield, Mass. Work on the building is to start at once and the contract calls for completion by December 1, 1916. The building is to be one story, of brick 300 by 90 feet, with a basement at one end 100 by 90 feet. It will be divided near the center by a fireproof section 50 feet long.

The directors of the Union Bag & Paper Company met on Thursday, July 6, and elected August Heckscher, chairman of the board of directors. E. B. Murray and Charles R. McMillen, vice-presidents of the company were elected members of the executive committee. No definite action was taken at this meeting in regard to filing the office of president which was made vacant by the death of John S. Riegel, on July 3.

The Wheat Paper Company, Elkhart, Ind., through A. G. Gilman, president and A. A. Wheat, treasurer, has forwarded to Sergeant George A. Shaffer for Company E, 300 sets of tablets, pencils and envelopes. Nine men in the company were employed at the Wheat Company and their positions will be open for them when they return.

The paper mill supply business of Mr. Helfgott and Son at 105 Chamber St., New York, will move shortly to 528 West 30th Street. The new home which is located near the railroad terminals, gives the firm unexcelled shipping facilities. The firm will continue to handle paper, boards and twine as heretofore, but on a larger scale.

The Bryant Paper Company has just closed a contract with the Chandler and Taylor Company, of Indianapolis, Ind., manufacturers of high grade engines and boilers, for an improved enclosed type of variable speed engine, which will be installed in the near future.

With a capital of \$150,000 the Underwood Paper Mills, Inc., has been incorporated at Plattsburgh, N. Y., to manufacture pulp, paper and other articles. The directors, George Tait and John C. McCabe, of Glens Falls and George F. Underwood, of Fort Edward.

Alfred J. Moran has severed his connection with the Box Board and Lining Company, and has gone into business with E. B. Thomas under the style of E. B. Thomas and Company, Incorporated, doing an import and export business with offices at 100 Hudson Street, New York. The concern will handle all grades of cotton rags, paper stock, baging, strings, etc.

The Storm Kink Paper Company has been incorporated at Moodna, N. Y., with a capital stock of

\$155,000. The directors are Corydon A. Woodward of Ridgewood, N. Y., and Edward R. Vollner and George R. LeSavage of Brooklyn.

An extension to the finishing room is being built at South Brewer, Me., by the Eastern Manufacturing Company. It will be three stories in height and a feature will be the maximum amount of window space, with a view to affording all the light possible to the workers. Excavation is now under way for the foundation which it is expected will be ready for occupancy about the middle of September. The new building will have a common wall with the finishing room and its dimensions will be 27 feet by 210 feet.

The Lockwood Trade Journal, Inc., publishers of the Paper Trade Journal, at 10 E. 39th St., New York, has been incorporated with a capital stock of \$300,000. Those interested in the corporation are Jerome D. Maley, Daytona, Fla., Leslie R. Palmer, Croton-on-Hudson and Arthur S. Wilmurt of Brooklyn.

Advices from Otsego, Mich., state that on account of the long continued illness of George E. Bardeen, for years one of the best known paper manufacturers in the Middle West, S. B. Monroe of Kalamazoo had been appointed general manager of the Bardeen Paper Company and of the Otsego Coated Company. While Mr. Monroe has had no actual experience as a paper maker he has for a number of years been connected with various paper companies as a director and an officer. He has reorganized a number of paper mills as well as starting several new ones all of which have been very successful and excellent dividend payers.

P. T. Dodge, president of the International Paper Company, has announced that until further notice, all men in the employ of the company who have been or may be called out for military service, will receive full pay, and, in so far as possible, be restored to their former positions.

M. Austin, a Canadian by birth and well known in the Dominion paper circles who for the past five years has been associated with S. W. Dunning at 132 Nassau Street, has severed his connection with that concern and accepted a position with the firm of O. H. Anderson and Company, 145 Nassau Street.

C. W. Litsey, secretary of the Cornell Wood Products Company, Cornell, Wis., has resigned his position, says a press dispatch. In this connection it is stated that all purchases for the Wood Products Company, hereafter will be under the direct supervision of H. C. Frisbie, general manager.

With objects to manufacture paper of all kinds, the Greasonia Paper Mills, Inc., has been chartered in New York City with a capital of \$25,000. The direc-

ers are Edgar J. Treacy of Cedarhurst and Roland R. Masquin, and Henry Lipton of Queens Borough.

The American International Corporation, a company organized last winter with a capital of \$50,000,000 for the purpose of promoting foreign trade and shipping, has become a subscriber to a controlling interest in the new Rosin and Turpentine Export Company of Georgia, which was recently chartered. The new company when organized will therefore be considered as a subsidiary concern of the American International Corporation. The capital of the Rosin and Turpentine Export Company will be very largely increased, \$2,500,000 was authorized under its charter, and its credit is sufficient for all the requirements of a very large naval stores exporting house.

The Missouri Paper Stock Company is one of the new concerns in the paper stock field at St. Louis, Mo. The officers in charge are men of wide experience, who are thoroughly familiar with conditions in the paper stock business and also with the requirements of the paper manufacturers.

THE NEWS-PRINT SHORTAGE.

Despatches from Boston state that the news-print situation has become so acute, particularly as regards conditions likely to prevail this fall, that the American Newspaper Publishers' Association has appealed to the papers to make a concerted effort to reduce their consumption of paper. This they can do, it is argued, by studying the niceties of economy of operation.

During the first five months of 1916, the United States and Canadian news-print mills produced 800,000 tons of news-print, an increase of 13 per cent over the same months of 1915. This was at the rate of 1,900,000 tons a year, or 150,000 tons above 1915 deliveries.

But this increased output, an increase fully double that of a normal year, has not fully supplied the demand. The mills have been unable to accumulate paper for the fall demand, and especially the demand which always comes in a presidential year. Usually the mills begin the latter part of May to pile up surplus stock of paper for the fall and winter demand. This lack of accumulation is what the official association of publishers fears will lead to trouble next winter.

The campaign for more careful use of news-print has already produced some good in the larger cities. One New York newspaper has reduced its consumption eight tons a day through economy of operation. Other papers in metropolitan centres have reduced three to ten tons daily.

MUST INCREASE PRICE OF PAPER.

United States Secretary Redfield predicts that when new paper contracts are made this fall newspaper publishers will be unable to get out one-cent newspapers without a loss, and an increase in price will be imperative. He believes that advertising rates will have to be increased also, as the increased cost of paper cannot be made up alone by the increase in price of the newspaper.

A BROKER'S COMMENT.

Greenshields & Co., stockbrokers of Montreal, who have had charge of the marketing of the Riordon Pulp and Paper Company's stock have the following to say in regard to pulp and paper stocks:

"A significant result of our offering is the large proportion of stock purchased by those engaged in the pulp and paper industry itself. The extraordinary situation which now obtains in the trade is, of course better known to those engaged in it than to the general public.

"At the present time the pulp and paper market is faced with a shortage of supply, due to the vastly increased consumption in the United States and the entrance of England into the Canadian market. The normal price of sulphite pulp is in the vicinity of \$40 per ton, while now a price of \$95 per ton is being paid at the mill, a record figure, and that the upward tendency of the market cannot be altered.

"The pulp and paper industry in Canada, backed as it is by the ownership of vast supplies of increasingly precious timber, which because of the water supply is accessible and subject to the cheapest manufacturing, is based on strongest of foundation."

RIORDON PULP AND PAPER PAYS DIVIDEND.

The directors of the Riordon Pulp and Paper Company met a few days ago and declared a dividend of one per cent per quarter on the common stock of the company, thus putting it on a 4 per cent per annum basis. As an interim dividend of 1½ was paid on the common in May, the common shareholders will receive a total of 2½ per cent out of the profits for the first seven months of the company's current fiscal year. The action bears out reports from various sources indicating that the immediate profits of the business are satisfactory and that the prospects are considered encouraging. Estimates of the current year's earnings, place the balance available for common stock dividends at the rate of about 18 per cent. If that is realised a 4 per cent dividend will be considered conservative.

The dividend just declared is payable August 15th to stock of record, July 31st.

PUBLISHERS TO TESTIFY.

Newspaper publishers throughout the United States have been invited by the Federal Trade Commission to be represented at a hearing in Washington on August 1 at 10 a.m. to discuss whether there has been an undue increase in the price of newsprint paper. The commission will conduct an exhaustive investigation, of which the public hearing will be the first step. The investigation was ordered by a resolution of the Senate.

The commission has sent word to 2,000 daily newspapers and 4,000 weekly papers asking those who cannot appear to submit any information they may have in writing. Field agents of the commission are now examining the accounts of paper manufacturers in the United States and Canada to determine the cost of production, profit, terms of sale and other questions. Other investigators are seeking information from jobbers on cost of distribution.

The commission is using all employees it has available to expedite the investigation and expects to report to the Senate by October 1.

1912, the first osd was turned for the news-print mill, and under the energetic direction of Warren Curtis, Jr., splendid progress has been made and it is reported that when the present undertakings are completed it would not be a surprise if there are further enlargements.

The Federal Paper Co., of Montreal, have notified the trade that, owing to the mills having discontinued all cash discounts, thereby making terms net cash, they have changed their terms to two per cent discount if accounts are paid by the twentieth of the month following or, if not paid until after that date, terms are net cash six days from average date of account.

The charter of the Sheppard Publishing Co., Limited, of Toronto, has been surrendered and the corporation dissolved.

C. F. Mansell, sales manager of the Toronto Paper Mfg. Co., Toronto, who shipped on a mat and wrenched one of the small bones of his foot, which laid him up for several days, is able to attend to his duties again.

There will shortly be issued the Ontario Public Service Bulletin, which will come out monthly under the direction of A. T. Wilgress, King's Printer for Ontario. It will contain from month to month a number of important articles dealing with works undertaken by each department which will keep the public in close touch with what is going on. In size and quality of paper, the Bulletin will be the same as the provincial blue books, but it will not have the blue cover. The Bulletin will have a wide distribution and will contain about twenty-four pages of reading matter in each issue.

The draughting department of the Mattagami Pulp and Paper Co., of Toronto, has been removed to Smooth Rocks Falls, Ont., where fine progress is being made on the construction of the new mill. Six hundred men are at work and good headway is being effected with the coffer dam, and the foundation for the new power house and sulphite mill. Several dwelling houses have been completed and the store has been finished, while construction is going ahead rapidly on the hotel.

J. W. Deyell, of Toronto, has bought a controlling interest in the Watchman-Warder, of Lindsay, Ont., whose former owner, Allan Gillies, met death by drowning about a year ago. Mr. Deyell is an old Lindsay boy, who for the past five years, has been on the staff of the MacLean Publishing Co., of Toronto.

The plant of the Doon Fibre Co., located at Doon in Waterloo County, Ont., was destroyed by fire last week, the loss being about forty-five thousand dollars, only partially covered by insurance.

The 244th Battalion, which is being recruited in Montreal for overseas service in which Capt. J. H. A. Acer, President of the Canadian Pulp and Paper Association holds a commission, will be known as "Kitchener's Own" to commemorate the work of the great warrior.

The two digesters and other equipment of the old Mispice pulp plant at St. John, N.B., owned by the Edward Partington Pulp and Paper Co., have been sold to the Berlin Mills Co.

CANADIAN PAPER FOR GREECE.

The Brompton Pulp and Paper Company, East Angus, have just shipped 300 tons of news-print to Greece.

PAPER IMPORTATIONS IN CUBA.

The following news items, forwarded to the Department by Mr. J. C. Manzer, special representative of the New Brunswick Government in Cuba, will be of interest.

OPENING FOR PAPER IN CUBA.

Cuba buys annually about 30,000 tons of paper. Of this 15,000 tons is news print and is brought to this country in large rolls, and when sold direct to the consumers is free of duty. All books, maps and other printed matter for the public schools are also free of duty.

The paper importations for 1914 were made up as follows:—

	Tons
News print	15,000
Bags and boxes	1,900
Printed books	200
Other printed matter	673
Blank books	257
Wall paper	8
Lithograph, maps, etc.	150
Other class of paper	12,000

The greater part of this paper is imported from the United States and only a limited quantity from Canada.

As Canada sells yearly about 30,000 tons of paper, she could therefore supply Cuba's full yearly requirements. It would seem a good policy to sell direct to Cuba rather than sell to the United States and have them forward same to Cuba.

CANADIAN REINDEER.

Two young reindeer have been born in the herd of the Laurentide Company, Ltd., which are believed to be the first ones born on the continent in Canada. They are now about three weeks old, much lighter in color than the adults and are growing finely. The herd now consists of three males, four females and two fawns.

PRICE OF PULPWOOD.

The price of pulpwood in Canada has increased ten cents a cord for 1916 over 1915, all Provinces except Quebec sharing in this increase. The total consumption has increased as follows: Quebec, 9.7 per cent; Ontario, 7.3 per cent; New Brunswick, 134.8 per cent; British Columbia, 13.2 per cent and Nova Scotia, 93.7 per cent.

R. H. CAMPBELL HONORED.

Mr. R. H. Campbell, director of the Dominion Forest Branch, has been elected a member of the Society of American Foresters.

LUMBERMEN GOING OVERSEAS.

Colonel James Walker of Calgary has accepted a captaincy in the 238th Forestry Battalion and is in charge of recruiting in Alberta and British Columbia. He was the first lumberman in Alberta, and in 1880 he ran the first sawmill that was ever in Calgary, his mill being situated on the present site of the G.T.P. depot.

It is estimated that there is enough waste from the sawmills of the Southern States alone to produce twenty thousand tons of paper a day.

PULP AND PAPER NEWS

I. W. Carpenter, President of the Carpenter Paper Co., Omaha, Neb., spent a few days in Montreal and other Canadian cities recently inquiring into business methods and on a purchasing trip.

A. M. Bush, of the Elsinore Paper Co., New York city, recently spent a few days in Montreal on his wedding trip and called upon a number of members of the trade.

F. J. Campbell, general manager of the Canada Paper Co., Windsor Mills, Que., has been holidaying in the Muskoka district.

Among those who took part in the recent tournament of the Ontario Bowling League at Niagara-on-the-Lake were F. L. Rateliff, of the Rateliff Paper Co., Toronto, who played with the Granites, and T. H. McDermott, manager of the Toronto branch of the Lincoln Paper Mills Co., who was a member of the Kew Beach rinks.

A. A. McDiarmid, chief engineer of the Mattagami Pulp and Paper Co., Toronto, who recently joined the ranks of the benedicts, and bride, have returned to Toronto, where they will reside.

G. G. S. Lindsey, of Toronto, who is the owner of Slate Island in Lake Superior, which is covered with a rich growth of pulp wood, has returned from a trip around the world. He spent a year in China.

Good progress is being made on the new building of the Northumberland Paper and Electric Co., at Campbellford, Ont. The structures are being built of stone and the contractor is Thomas MacManus, of Campbellford. The machine room is 330 feet long by 40 feet wide and 20 feet high. The beater room is two storeys, 110 feet long by 40 feet wide, the digester room 50 x 28 feet, two storeys, the boiler house 50 x 35 feet, the warehouse 200 x 32 feet, and the machine shop 60 x 30 feet. The contract for the six cylinder board machine, which will be 72 inches wide, has been awarded to the Downington Manufacturing Co., East Downington, Pa. There are four beaters of 1,500 pounds each, three Jordan refining engines, and three digesters, each of fourteen feet diameter. The capacity of the new mill will be about twenty-five tons daily, an increase of fifty per cent over the old mill which was destroyed by fire in February last. The power will be partly steam and electricity. The company will make straw board, filled board, chip board and vat lined board and expect to have the new plant in operation in October next. All the buildings are connected except the boiler house and the machine shop.

The settlers of Northern Ontario last year took out and shipped one hundred and ten thousand cords of pulp wood, which when loaded on the cars, was worth on the average six dollars per cord.

The ground wood pulp mill of Pacific Mills, Limited, which is located at Ocean Falls, B.C., and has been idle for a long time, is again in operation while the new news-print mill is being rushed to completion. Ocean Falls is a scene of great activity at present.

W. P. Ryrie, who is managing director of Becker

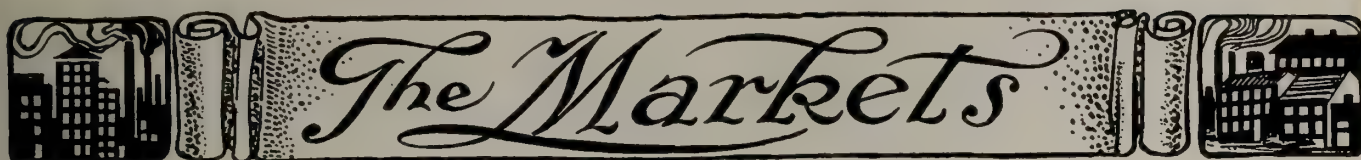
and Co., of America, and in Masonic circles, has attained the rank of the thirty-third degree in the Scottish rite, being for two years Supreme Grand Master of the Knights Templar in Canada, recently had conferred upon him at Buffalo the distinction of being elected the first honorary life member from Canada in the Imperial Council of that body, which presides over the destinies of the Mystic Shrine for North America. Mr. Ryrie who is a member of Rameses Temple, Toronto, is receiving the congratulations of his many friends in the pulp and paper trade on this mark of preferment in the Order.

A charter has been granted to M. Granatstein and Sons, of Toronto, Limited, who have been incorporated with a capital stock of one hundred and fifty thousand dollars. The company is empowered to carry on in all its branches the business of rag and waste paper dealers and to buy, sell and manufacture paper, pulp, lumber, etc. The company will take over the business at present carried on by M. Granatstein and Sons, 486 Wellington Street W., Toronto.

The Toronto Paper Mfg. Co., whose plant is located at Cornwall, Ont., have decided to instal a fourth paper machine in order to be in a better way to take care of the increased requirements of their customers for book and writing papers. The new machine will be an eighty-two inch Fourdrinier and will be of the most modern type. The company are fortunate in having available the necessary space for the new installation and no structural changes in the mill building will be required. The capacity of the plant will then be thirty tons a day. It is expected that the new machine will be in operation before the end of the year.

R. S. Waldie, President of the company, stated this week that they had decided to take this forward step as, under present conditions, the demand for book and writing papers in the Dominion exceeds the supply. W. Wallace is Manager and Treasurer of the company; Forbes Wood, Superintendent, and C. F. Mansell, of Toronto, general sales manager.

The work of erecting the new sulphite pulp mill of the Ontario Paper Co. at Thorold, Ont., is going ahead rapidly. The contract is in the hands of W. J. Trimble of Toronto. The new paper machine room in course of construction will be 100 feet wide and 273 feet long. The railway sidings on the west side of the mill have been moved out closer to the office building and the machine room will be located where they were. The new paper machine will be 162 inches wide and, with the present two machines, will bring the output up to about 175 tons of news-print a day. A cylinder wrapping machine, which is 104 inches wide, will be installed and put in operation some time this fall. The new sulphite plant is being erected to the east of the present paper mill on the north end of it, between the mill and the Grand Trunk Railway. It is being built of steel, concrete and brick. The capacity will be fifty tons per day and the two digesters will each be fifteen feet in diameter and forty nine in height. In June,



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The demand for news-print keeps up and prices are growing stronger all the time. There were never as many projects under way or about to be undertaken in the Dominion in the shape of new mills as at the present time.

One of the biggest factors in the trend of affairs is the decision of the International Paper Co. to erect a two hundred ton news mill in Canada. It indicates the future of the industry in the northern half of the continent which experts have long predicted would in time become the chief paper producing area of the world.

Within twelve months, it is believed that the production of news-print in Canada will be about three thousand tons daily. It is now over two and an export trade is being done of a million and a half a month, or eighteen million dollars a year. Five years ago the export of Canadian news-print was \$3,092,437. As much export business is now done in two months as was done in twelve months in 1910-11. Those who are in a position to know, predict that for the coming year, the returns will show fully twenty-five million dollars worth of news-print exported. There is not a mill in Canada which is not now making money in spite of the scarcity of labor, and the high cost of raw material. No one will begrudge them any good luck that comes as for years many of them had a struggle to make ends meet. They had to slash prices and do any amount of hard work and strenuous thinking to keep their plants operating to capacity.

In the book and writing line there will also be decided development in the near future, and several new machines will be added. Production is not nearly equal to the domestic demand. This has been the state of affairs brought about, of course, by the fact that, previous to the war Canada imported about eight million dollars worth of paper in various lines, and, while home industries have made this up to a certain extent, there is no doubt that a large deficiency still exists. Some of the mills are sold up to October and November, and while orders are not so numerous as they were three and four months ago, this is not causing the manufacturers any worry. Higher prices have proved no deterrent to the demand, and no quotations are given other than open ones. The mills do not know how high sulphite pulp, rags and paper stock, etc., may go. If ground pulp wood takes on an enormous increase, as it is likely to do, owing to the scarcity of labor and so many forestry and construction battalions being raised for service overseas, it means that men will have to be brought in from the other side to enter the bush and take the place of home labor. This cannot be done without a large increase in wages and other attendant expenses. It is idle just at present to conjecture what will happen, but sulphite pulp, which is now quoted at over a hundred dollars in the open

market, may go to one hundred and twenty-five for easy bleaching and perhaps more. There appears to be no relief from Europe and one large Canadian mill closed an order last week for five hundred tons at a figure which a few months ago would have been thought preposterous.

There is a big demand abroad for pulp, but Canadian plants are taking care of all American contracts first. Some of these are now expiring and manufacturers will have a chance to cash in on the higher quotations. Ground wood is also getting stiffer in price, and although the raise has been gradual, this commodity has been the last to share in the upward trend. Manufacturers expect from this that an increase from ten to twenty per cent will prevail.

The majority of paper and pulp men look for the war to continue another year and feel reasonably sure that, unless it should end suddenly or something entirely unforeseen looms up, there will be no slump in paper prices. Just a year ago all lines of the business were quiet and there was the customary midsummer lull in paper and pulp circles, but this season, with good water conditions, an active demand and high prices. August, usually the quietest month in the year, will be as busy with the plants as any other period. The quotations on wrapping paper continue to strengthen and all mills are working to capacity. Jobbers report that July was a good month and the outlook for fall was never better.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls), \$2.50 up, at mill, in carload lots.
 News (sheets), \$2.75 up, at mill, in carload lots.
 Book papers (carload), No. 3, \$6.00.
 Book papers (ton lots), No. 3, 6.00c to 7.00c.
 Book papers (carload), No. 2, 7.50c to 8.00c.
 Book papers (ton lots), No. 2, 7.75c to 8.25c.
 Book papers (carload), No. 1, 8.00c to 8.50c.
 Book papers (ton lots), No. 1, 8.25c to 8.75c.
 Sulphite bonds, 9c up.
 Writings, 7½c up.
 Grey Browns, \$3.50 to \$4.50.
 Fibre, \$5.50 to \$6.25.
 Manila No. 1, \$5.50 to \$6.25.
 Manila, B., \$4.25 to \$4.75.
 Unglazed Kraft, \$7.50 to \$9.00.
 Glazed Kraft, \$8.00 to \$9.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, bleached, 1.00c to 1.50c.
 Tissues, unbleached, 80c to 1.15c.
 Tissues, cap., 60c to 80c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.
 Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 40c.
 Paper bags, kraft, 25 discount.
 Confectionery bags, 20 discount.

Pulp.

Ground wood, \$22 to \$26.
 Ground woodpulp (at mill) \$19 to \$20.
 Easy Bleaching Sulphite, \$105.00 up.
 Sulphite, news grade, \$85.00 up.
 Sulphite (bleached), delivered, \$150.00 up.
 Sulphate, delivered, \$125.00 up.

Quotations, f.o.b. Montreal, are as follows:—

These prices are quoted only provided that the paper is in stock. Otherwise orders are booked only with the understanding that the mills will make when they can, and that the price will be that prevailing at date of shipment.

Book—News—Writing and Posters.

Roll News, \$41 to \$45 per ton for large orders; \$60 to \$70 per ton for small orders.
 Ream News \$50 to \$55 per ton for large orders; \$60 to \$70 per ton for small orders.
 No. 1 Book, 7.50 to 8.25.
 No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.
 No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.
 Writings, 6.95 to 10.
 Writing Manila, 6.95.
 Cover Papers, 7½ to 11c per lb., according to colors wanted.
 Colored Poster, 6½ to 7½.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
White Wray, Cleaver, 100 lbs...	3.40	3.65	3.90
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs...	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			

NEW YORK MARKETS.

(Special to Pulp and Paper Magazine).

Ground wood has continued to hold firm with an advancing tendency. Present prices are as high as \$22.50, f.o.b. pulp mill. The only reason that quotations have not advanced any further has been because of the wet weather. The rain during the past few weeks has been such as to enable the grinders to work at capacity, thus making it possible for a maximum production. However, while this will temporarily keep the market from getting very acute, it cannot last very long. Even with the wet weather, the supply of ground wood is not large enough to meet the demand. Many of the grinders have sold their output ahead for some time to come, so their efforts are merely to fulfill obligations. Those manufacturers, which have pulp to sell, are holding for good prices, anticipating a higher market. That a higher market will be experienced soon, seems inevitable. At the present time, the consumers of

ground wood are working at capacity, using as much pulp as they can possibly use. This will continue, according to present indications for several months to come. Before this time has elapsed, it is feared that a shortage will be felt in the market.

The course of the chemical pulp market seems to be tending constantly upward. While stocks have been coming from abroad, they have been comparatively small in quantities and insufficient to be of any material consequence in shaping conditions. What is more, current imports are said to be entirely for immediate consumption, so that the pulp cannot be reckoned with "stock available." As a matter of fact, foreign stocks in this country are almost exhausted by this time. Importers have been compelled to find whatever they could, in the way of domestic merchandise, in order to continue the maintenance of their offices. While bleached sulphite has been quoted at 8½c to 9½c, this figure, it is generally agreed, is merely nominal. There are practically no stocks available at the present time. The position of easy bleaching has placed a premium on easy bleaching, which is now quoted as high as 6¼c. But even 6¼c will not buy much foreign easy bleaching to-day, because there is little to be bought. Unbleached stock is quoted at 5c to 5½c, also a nominal figure. In kraft pulp, the scarcity is being keenly felt and while prices as high as 5¾c for odd lots have been reported, there is little to be had at this figure. In domestic chemical pulps, the market has been strengthening remarkably. A number of mills have sold their production for the entire year. Bleached pulp is hard to obtain in any large quantity, even at 7c. Unbleached pulp is being quoted at 4c. Prospects for the future indicate nothing but higher prices. Abroad, they are now paying much more for their pulp than is being paid in this country. The pulp producers still complain of the difficulties in manufacture and of the ever increasing costs of raw materials. From the offerings being made for future delivery, it is evident that there will be no tendency for prices to decline for some time.

Aside from a regular amount of stock moving, there has been no noted improvement in the rag market. It is claimed that many of the mills are still trying to hold out from buying. While they have succeeded in this, so far, stock dealers feel that they cannot do so much longer. It has been estimated that the mills are nearing the ends of their supplies and that, with their plants operating at full capacity, they will be compelled to come out in the open market. The demand for new rags continues fair, with prices for No. 1 white shirt cuttings at about 9c to 9½c. Old whites, No. 1, are quoted at 6¼c; house soiled whites, at 5c; street soiled whites, at 4¼c, thirds and blues, at 4¼c to 4½c; black stockings at 4¼c. Roofing has been moving better and has sold as high as 2¼c. It is hoped that this is a sign of more life within the near future.

Surprising though it may seem, there has been no material change in bagging or in rope. The demand for these goods has been very quiet, so, despite their scarcity, prices have not advanced. Gunny is quoted at 3½c; bright bagging, at 3½c; sound bagging, at 3c; mixed bagging at 2¾c; wool tares, light, 3¾c, and heavy wool tares, 3½c. Manila rope is quoted at 4½c. No imports have been received recently, so that domestic supplies are not being replenished. It is expected that, within a month or so, the market will be forced up by an extreme scarcity.

While many dealers in waste papers are holding out for good prices, awaiting a high market on account of the scarcity of sulphite and rags, report have been heard of sales at fairly low prices. These sales have evidently been made by concerns which are anxious to keep their stock moving and which have suffered from the quiet conditions existing in the market. Hard white shavings are worth about 4c to 4½c, for the No. 1, and 3¼c to 3½c for the No. 2. Soft white shavings are selling as high as 3¾c. Straight magazine is quoted at 1¼c; solid flat book, at 1¾c; good crumpled, 1¼c to 1½c; solid book ledger, 2.35c; white news, 1½c; old krafts, 2¾c to 3c. Old newspapers have been holding firm. Strictly over-issues are holding to 90c to \$1; strictly folded, 80c; No. 1 mixed paper, 61½c to 67½c; common paper, 40c to 45c.

Conditions in the paper market continue very firm. It is understood that in certain jobbing circles, there has been an easing in demand, but this has not been noticed by the mills, which are working at full capacity, endeavoring to take care of their numerous obligations. Prices are firmer than they have ever been. In fact, there are many mills which are refusing to quote, believing that further advances are imminent. From the way in which raw materials are acting, there seems to be absolutely no question as to whether prices will go higher.

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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Fraser, W., Montreal
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

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Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Sadler & Haworth, Montreal.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. F., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calendar Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Cars, Dump and Flat

Fraser, W., Montreal
Sessenwein Bros., Montreal

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

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Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
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Counter Shaft Fixtures:

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H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
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Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

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The Waterous Engine Works Co., Limited, Brantford, Ont.

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Cranes—Hand Power:

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Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
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Jones and Glassco, St. Nicholas Building, Montreal.
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Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

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The Waterous Engine Works Co., Limited, Brantford, Ont.

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The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
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Exhausters:

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 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

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Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
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 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

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H. W. Caldwell & Son Co., Chicago.

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Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

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H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

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 Process Engineers, Ltd., Montreal, Canada.

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 Disston, H. & Sons, Ltd., Toronto, Ont.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

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 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

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 Fraser, W., Montreal

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 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada
 Carthage Machine Co., Carthage, N.Y.
 Downingtown Mfg. Co., East Downingtown, Pa.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Norwood Engineering Co., Cowansville, P.Q.
 Process Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
 Process Engineers, Limited, Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Fraser, W., Montreal.
 Gartshore, J. J., Toronto
 Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Rope, Cotton and Manilla:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

MILL SUPPLIES---Continued

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

The Watrous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jones & Glassco, Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Travelling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurttemberg, Germany.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Tippet, Arthur P. & Co., Montreal, Canada.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R., Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City.

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.

Lincoln Paper Mills Co., Ltd., Merritt, Ont.

Ford, J. & Co., Port Neuf.

Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.

Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catherine's, Ont.

Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que. and

Montreal, Que.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.

Eddy Co., The E. B., Ltd., Hull, Que.

Kinleith Paper Co., Ltd., St. Catherine's, Ont.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristo .

Don Valley Paper Co., Ltd., Toronto, Ont.
 Toronto Paper Mfg. Co., Cornwall, Ont.
 Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
 British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
 Eastern Paper Co., Ltd., St. Basile, Que.
 Ford, J. & Co., Portneuf Station, Que.
 Montreal Paper Co., St. Basile, Que.
 Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
 Riordon Pulp and Paper Co., Ltd., Montreal, Que.
 Western Paper Mills, Ltd., Vancouver, B.C.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Ford, R. & Son, Port Neuf, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Strathcona Paper Co., Strathcona, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 McLeod Pulp Co., Ltd., Liverpool, N.S.
 Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
 Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
 Jonquiere Pulp Co., Jonquiere, Que.
 Macleod Pulp Co., Ltd., Liverpool, N.S.
 Canada Paper Co., Windsor Mills, Que.
 Booth, J. R., Ottawa, Ont.
 Eddy, E. B. Co., Ltd., Hull, Que.
 Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
 Ford, J. & Co., Port Neuf Station, Que.
 Montreal Paper Co., St. Basile, Que.
 Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
 Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
 Georgetown Coating Mills, Ltd., Georgetown, Ont.
 National Paper Co., Valleyfield, Que.
 Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
 Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
 Don Valley Paper Co., Ltd., Toronto, Ont.
 Eddy Co., The E. B. Ltd., Hull, Que.
 Provincial Paper Mills Co., Ltd., Toronto, Ont.
 Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
 Kinleith Paper Co., Ltd., St. Catharines, Ont.
 Provincial Paper Mills Co., Ltd., Toronto, Ont.
 Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
 Eastern Paper Co., Ltd., St. Basile, Que.
 McArthur, A. & Co., Montreal, Que.
 Ford, J. & Co., Port Neuf, Que.
 Ford, R. & Son, Port Neuf Station, Que.
 Montreal Paper Co., St. Basile, Que.
 Northumberland Paper & Electric Co., Ltd., Campbellford.
 Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
 Dominion Paper Co., Montreal, Que.
 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 Riordon Pulp and Paper Co., Merritton, Ont.
 Strathcona Paper Co., Strathcona, Ont.
 Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
 Lincoln Paper Mills, Ltd., Merritton, Ont.
 Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
 Dominion Paper Co., Montreal, Que.
 Dryden Timber and Power Co., Ltd., Dryden, Ont.
 Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
 Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
 Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
 Booth, J. R. Ottawa, Ont.
 Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
 Crabtree and Son, Edwin, Crabtree Mills, Quebec.
 Donnacona Pulp and Paper Co., Donnacona, Que.
 Eddy Co., The E. B. Co., Ltd., Hull, Que.
 Ford, J. & Co., Portneuf Station, Que.
 Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
 Laurentide Co., Ltd., Grand Mere, Que.
 News Pulp & Paper Co., Ltd., St. Raymond, Que.
 Powell River Co., Ltd., Powell River, B.C.
 Price Bros. & Co., Ltd., Kenogami, Que.
 Riordon Pulp and Paper Co., Ltd., Montreal, Que.
 Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
 Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
 Eastern Paper Co., Ltd., St. Basile, Que.
 Ford, Joseph & Co., Port Neuf, Que.
 Ford, Rowland & Son, Port Neuf, Que.
 Montreal Paper Co., St. Basile, Que.
 Walker, J. R. & Co., 35 Common, Montreal, Que.
 Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
 Ford, J. & Co., Port Neuf, Que.
 Lazier Paper Mills, Ltd., Belleville, Ont.
 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
 McArthur, A. & Co., Montreal, Que.
 Northumberland Paper & Electric Co., Campbellford, Ont.
 Trent River Paper Co., Ltd., Frankford, Ont.
 Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
 Eddy, The E. B. Co., Ltd., Hull, Que.
 J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
 Garden City Paper Mills, Ltd., St. Catharines, Ont.
 Interlake Tissue Mills, Ltd., Merritton, Ont.
 Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
 Bishoprick Wallboard Co., Ottawa, Ont.
 Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
 Booth, J. R. Ottawa.
 Brompton Pulp & Paper Co., Ltd., East Angus, Que.
 Canada Paper Co., Montreal, Que.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Northumberland Paper & Electric Co., Campbellford, Ont.
 McLeod Pulp Co., Liverpool, N.S.
 Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
 Canada Paper Co., Ltd., Montreal, and Toronto.
 Dominion Paper Co., Montreal, Que.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Ford, J. & Co., Port Neuf, Que.
 Ford, Rowland, Port Neuf, Que.
 Gore Valley Paper Mills, Dundas, Ont.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Canada Paper Co., Montreal and Toronto.
 Wilson, J. C., Ltd., Montreal, Que.
 [See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
 Howard Smith Paper Mills, Ltd., Beauharnois, Que.
 Kinleith Paper Co., St. Catharines, Ont.
 Rolland Paper Co., Montreal, Que.
 Provincial Paper Mills Co., Ltd., Toronto, Ont.
 Toronto Paper Manufacturing Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines
Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue
John Martin Paper Co., Ltd.
Teese & Persse, of Alberta, Limited.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Teese & Persse, of Alberta, Limited.

VANCOUVER, B.C.:

Brake, Crendon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 1044 Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

FORT WILLIAM, ONT.:

Tees & Persse.

TORONTO, ONT.:

Barber-Ellis Co., Ltd., 71 Wellington Street W.
Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge, Jas., Chatham, N. B.....	
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6
The Bronson Company.....	

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	8
Canadian Fairbanks-Morse Co., Ltd.....	10
Canadian Kellogg Company.....	7
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	13
Capital Wire Cloth Mfg. Co., Ltd.....	60
Carthage Machine Co.....	
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	
Christie George, Ltd.....	
Churchill & Sim.....	62
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D

Darling Bros, Ltd.....	
DeCew, J. A.....	64
Dean & Son.....	49
Disston, H. & Sons, Ltd.....	6
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
Ferguson, H. S.....	64
J. Ford & Company.....	62
Fraser, W.....	65

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	49
Glens Falls Machine Works.....	6
Goldie and McCulloch Co., Limited.....	3

Groot, H. de

H

Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	62
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	60
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	65
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K

Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Mackinnon, Holmes & Co.....	60
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15

N

Northern Crane Works, Ltd.....	62
Norwood Engineering Co. of Can. Ltd.....	61

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	62

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	49

S

Sadler and Haworth.....	50
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	
Ticonderoga Machine Works.....	
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	60
Voith, J. M.....	12

W

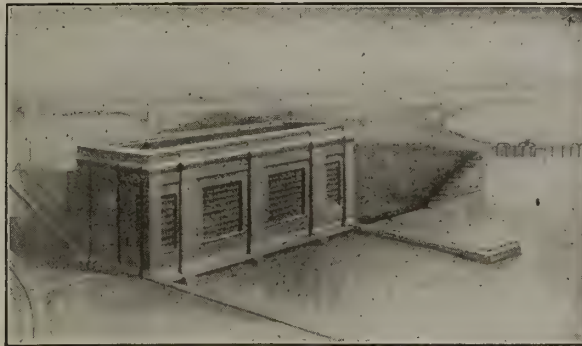
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	
Wilson-Paterson Co.....	



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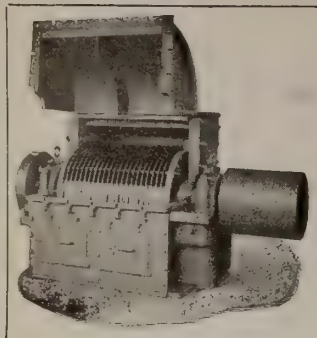


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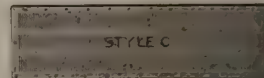
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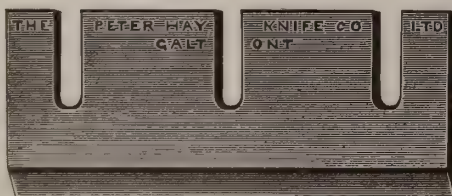
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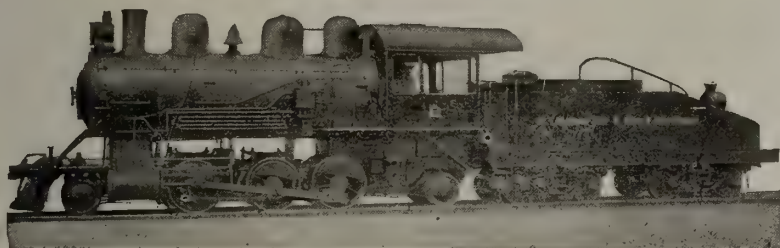
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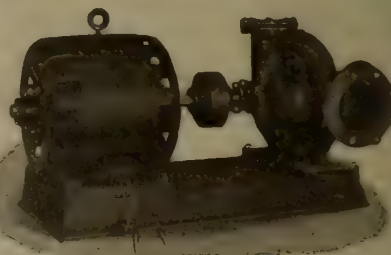
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IMPORTANCE OF ACCOUNTING IN
PULP AND PAPER MILLS
(Concluded).

NEWS

MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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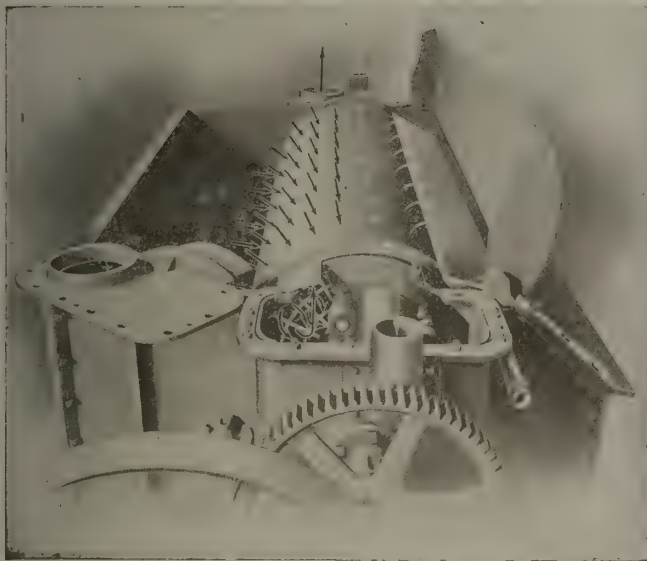
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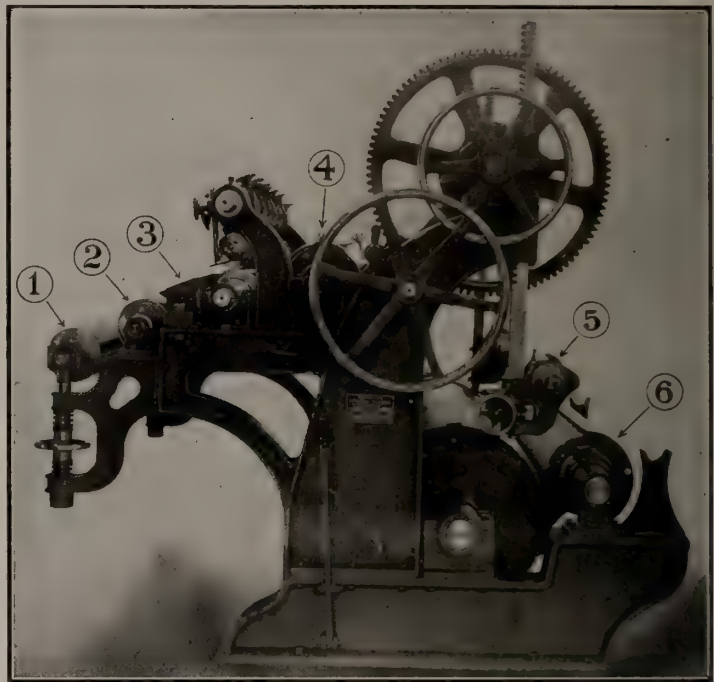
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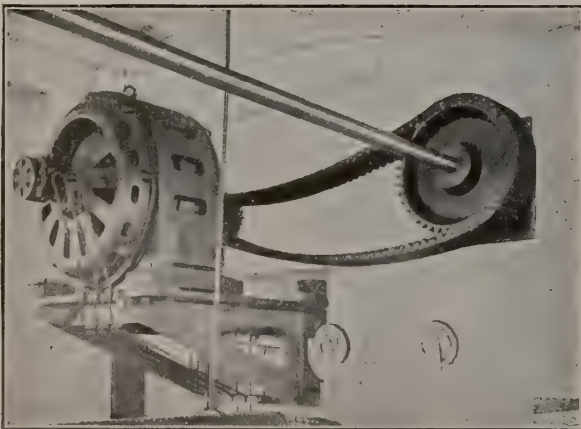
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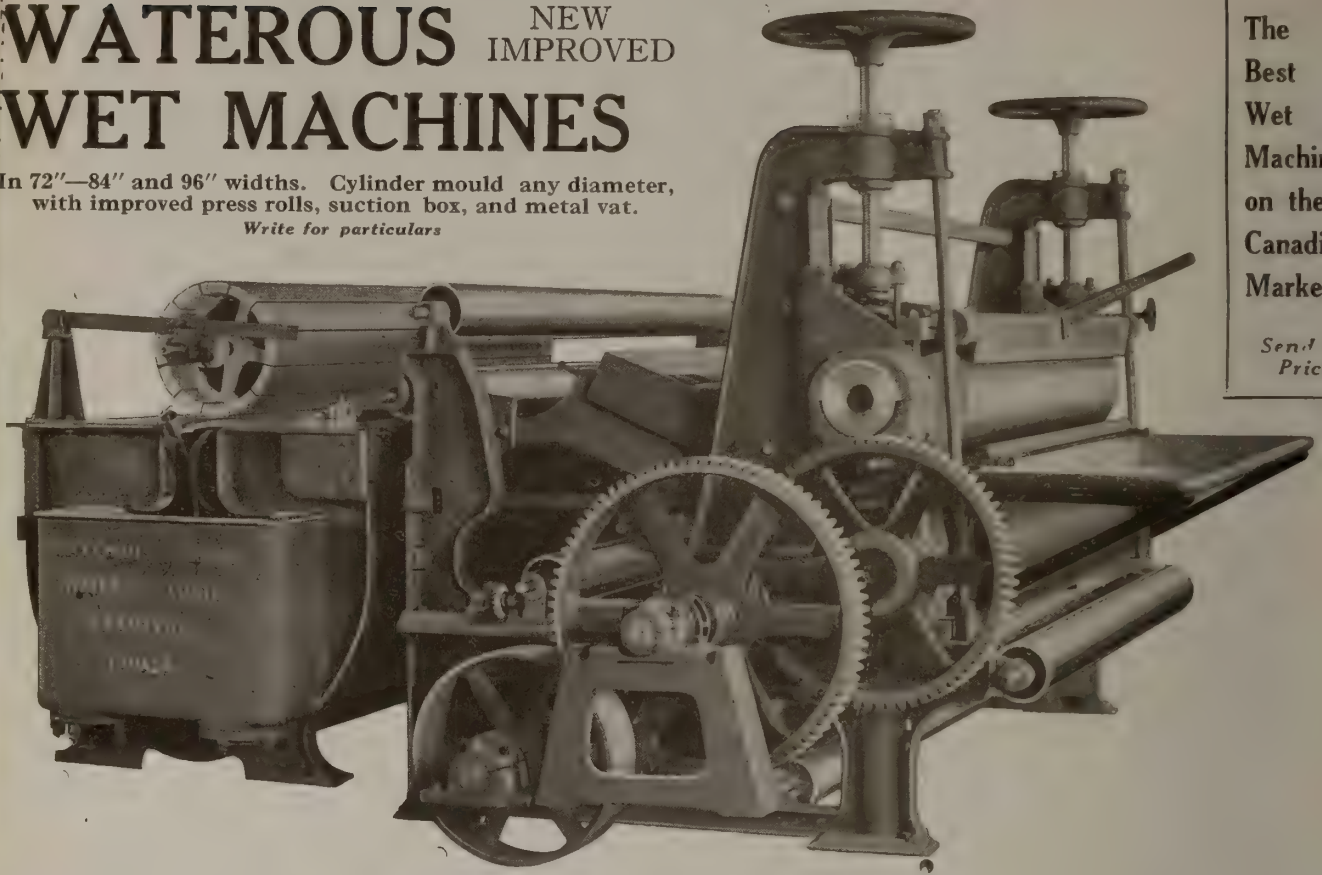
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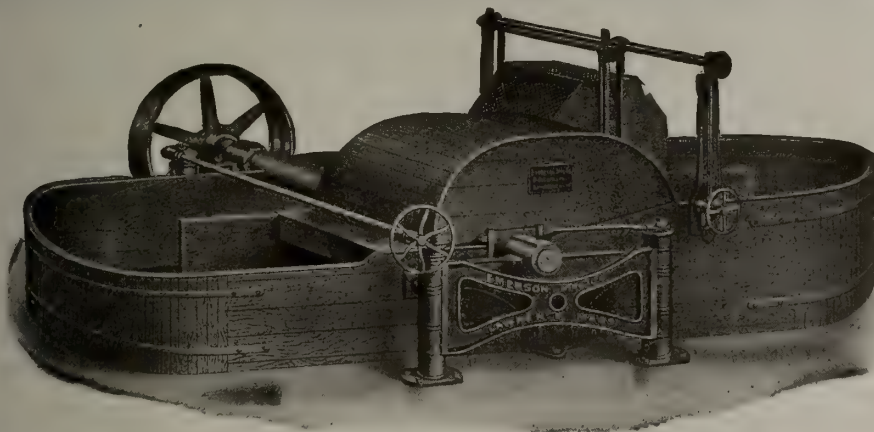
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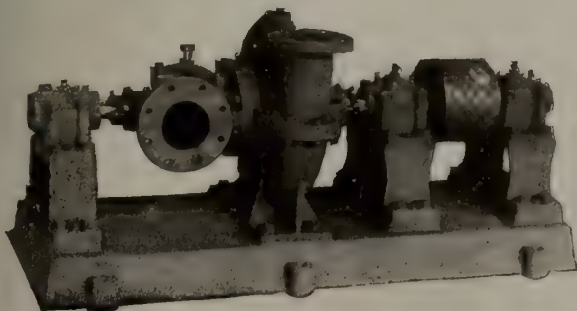
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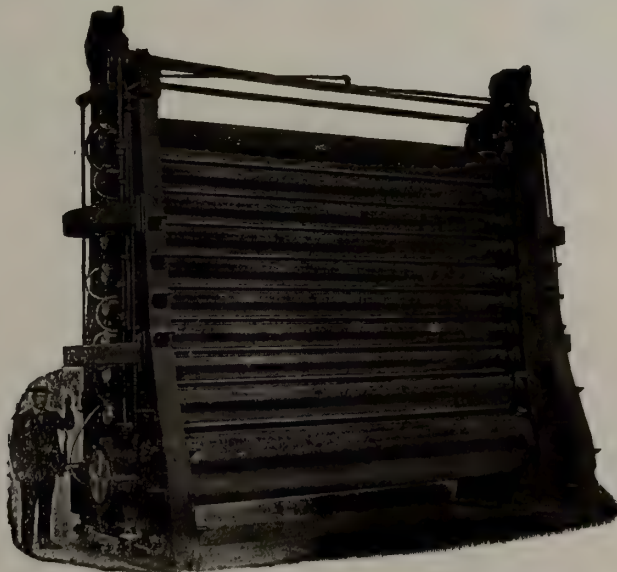
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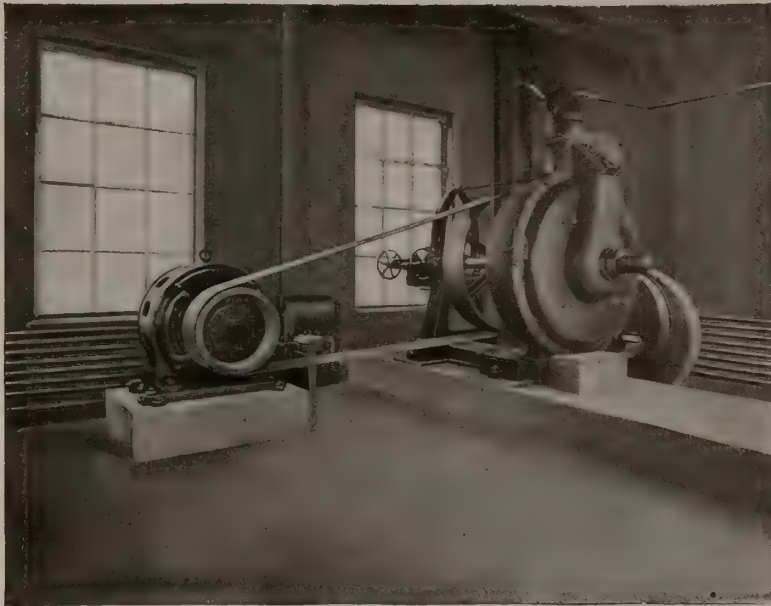
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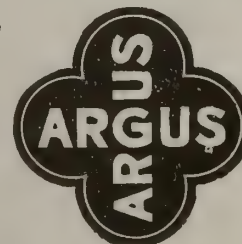
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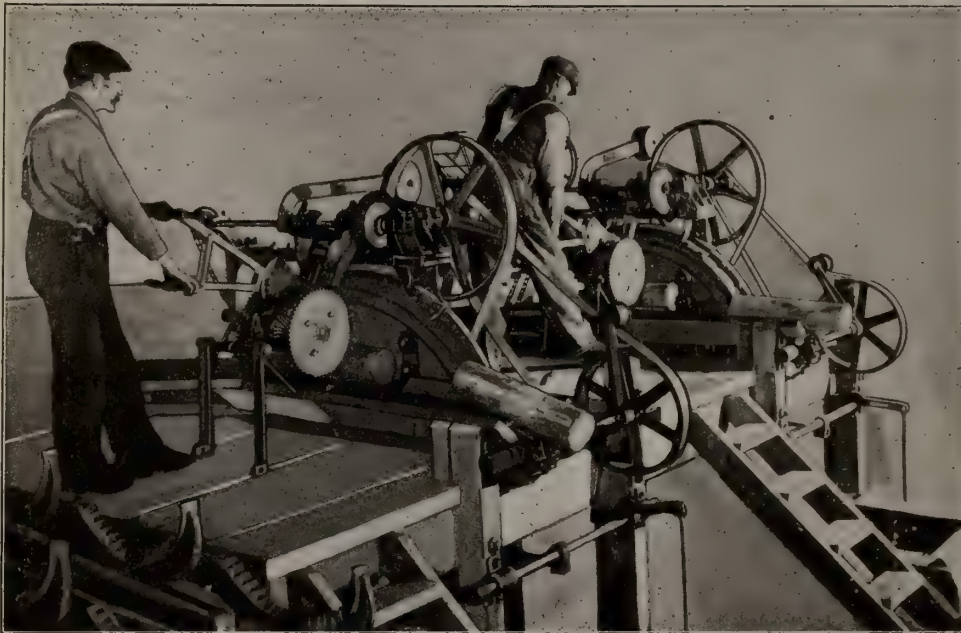
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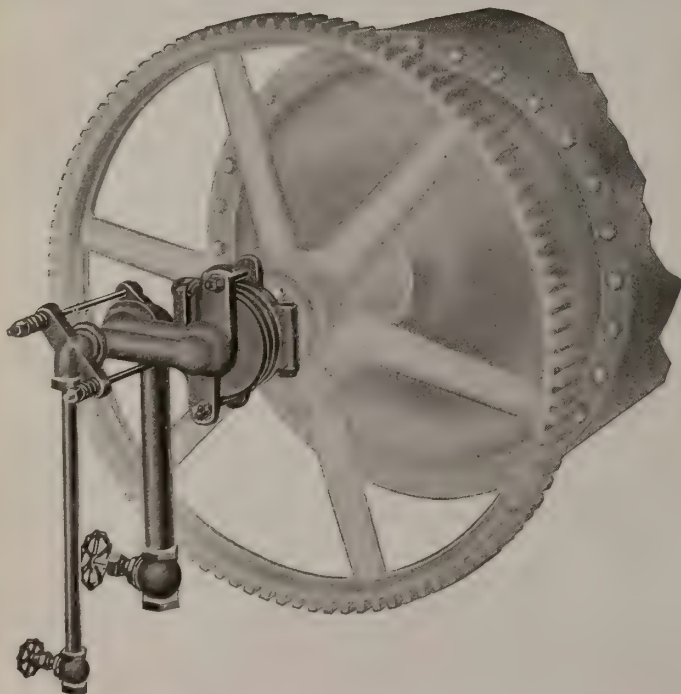
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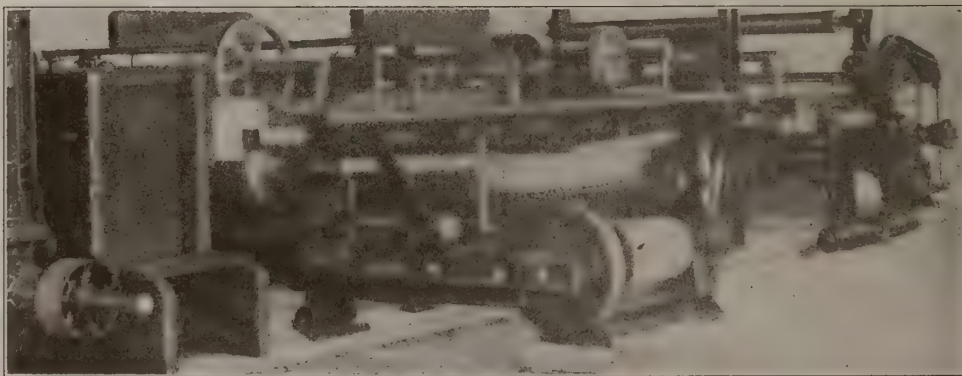
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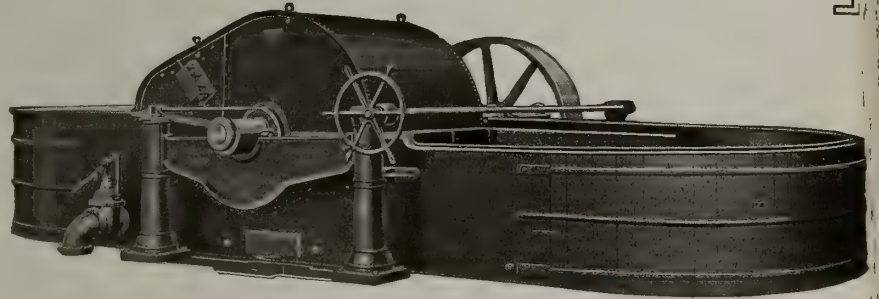
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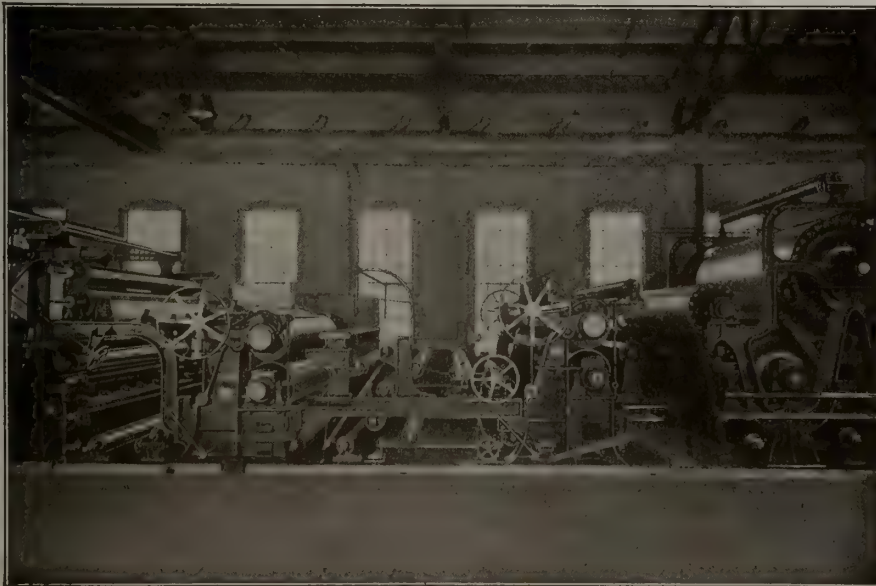
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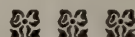
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*Official Journal of the Technical Section of
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VOL. XIII.

MONTREAL, AUGUST 15, 1916

No. 16

The Pulp Wood Situation

The problems confronting paper-makers seem endless! They not only have to face mounting costs of the commodities entering into the manufacture of their finished product, meet and overcome labor difficulties, grapple with increased transportation charges, fight fires and floods, but now must deal with a threatened shortage of pulp wood.

In many cases pulp and paper manufacturers have failed to grasp the significance of the wood situation. Prices are listed at but little above normal quotations and large consumers have been lulled by this apparent ideal condition into thinking that they can obtain their customary supplies at pre-war prices or at a slight advance. The truth of the matter is that there has been no buying and the prices quoted are purely nominal. Let a buyer go into the market and he will find that there is little or no wood to be had at present prices and an advance of a dollar or more per cord would be necessary to secure any large quantity. In a year from now it would not be at all surprising to see pulp wood selling at from three to four dollars per cord above present quotations.

Like many other industries which have become disorganized by the war, the pulp wood dealers blame Mars for present conditions. The war has decreased the supply of workmen so that there has been a smaller amount of pulp wood cut than in normal years. At the same time wages have advanced which automatically affects the price of every cord of wood. Increased rail charges have added their quota to the mounting cost while the scarcity of boats has further complicated the situation. In addition the forest fires of Northern Ontario and other places have destroyed large quantities of pulp wood and forests which might produce suitable wood.

Combined with these facts are the reports sent out by mills all over the country telling of increased consumption. To-day mills in Canada and the United States are working to capacity and consuming more wood than at any time in their history. In some cases it looks as if mill owners, harassed by the many problems pressing for solution at the moment, had neglected to provide for their future pulp wood. Unless they do this at once there is grave danger of their confronting a shortage in the near future and having to pay a great deal more for every cord they are able to obtain.

Forest Fires

The disastrous forest fire which swept over Northern Ontario two weeks ago causing the loss of over 400 lives and many millions of dollars worth of property reminds us of one of our most pressing problems. More timber has been destroyed in Canada by fire than has been cut down by the axe of the lumberman. Year after year, ever since the white men first came to the country, there have been great forest fires until vast areas of our north land have been swept bare of trees and have become barren wastes. Much of this land is unfit for cultivation and once the trees have been destroyed the shallow soil washes away and we have nothing but bare rocks and desolation.

The causes of these regularly recurring fires are many, most of which can be attributed to carelessness of one sort or another. Careless settlers who are allowed to set fires in order to clear their land at any, or

every season, careless campers who leave smouldering fires to fan into flames with the first passing breeze, careless hunters who toss away lighted matches and cigar butts—these are but a few of the many causes of our forest fires.

The chief remedy seems to lie in the elimination of all carelessness. To accomplish this, settlers, campers, hunters, railroads and everyone else coming into contact with our forests must be taught the danger of fires. Stringent laws must go hand-in-hand with the educational work so that where the one fails the other will make good.

The toll of 400 lives, the loss of millions of cords of pulp wood, the destruction of fine forests and the resultant interference with business is a loss which cannot be counted in dollars and cents. It is a clarion call for the taking of measures which will prevent repetition of any such disaster.

Canada's Paper Exports

Any doubting Thomas in the paper industry can be cured of his pessimism by consulting a Government blue book. Generally this gives a man the blues, but not in the case of the man who looks for the record of Canada's paper exports in the past quarter of a century.

Some twenty-four years ago a lone Argonaut ventured into the unknown seas of foreign trade and shipped out \$91.00 worth of paper. Who this brave voyageur was is not known, but perhaps some day a historian will do adequate justice to this pioneer in the paper export field. The first shipment of paper was made in 1892, and as stated above was valued at \$91.00. Last year Canada exported over fifteen and a half million dollars worth, while in the past three months we have exported \$4,600,000 worth, or a million dollars more than in the corresponding months of 1915.

Between the line \$91.00 and the \$15,500,000 of last year there is a great gap fixed—a gap bridged by the initiative, foresight, courage and technical skill of our paper makers and captains of industry. The following table showing our exports at intervals of a few years, is highly significant:

Year.	Exports.
1892	\$91
1902	\$24,000
1912	\$3,881,000
1913	\$6,327,000
1915	\$15,509,000

This year it is expected that our exports will approach the twenty million dollar mark, a far cry from the initial export business transacted less than a quarter of a century ago.

Substitutes For Wood Pulp

According to press despatches the Germans are substituting paper made from nettles for the ordinary paper made from wood-pulp. This is nothing new. From all parts of the world, almost from the time when paper was first made, there have come reports regarding substitutes for wood. In turn, announcements have been made that paper made from straw would replace wood; paper from corn stalks; from cotton hulls and from various kinds of grasses.

It is quite true that paper can be made from these various commodities, but the cost of providing it in commercial quantities is so great as to prohibit the development of any such industry. Doubtless, the Germans are hard put to and will be forced to substitute many inferior commodities for the materials they formerly used. This will be true not only of paper making, but in connection with munitions and all kinds of industry.

The Pulp and Paper Magazine has no great fears that a substitute will be found for wood pulp, so in our opinion possessors of valuable timber and pulp forests can go to sleep at nights without worrying. Wood is still supreme for paper making.

INCREASED COST OF CHEMICALS.

Here is the way prices have increased in two years on chemicals used in newspaper production: Calcium chloride, per pound, 20 to 25 cents; acetic acid, per gallon, 75 cents to \$1.50; grain alcohol, from \$2.70 to \$2.90 a gallon; turpentine, 50 to 55 cents a gallon; iodine, \$4 to \$5.55 per pound; Babbitt's lye, 60 to 90 cents a dozen tins; hydrobromic acid, 60 cents to \$3.50 a pound; blue aniline, \$1.50 to \$3.50 a measure; silver nitrate, \$5 to \$8.70 a measure; gun cotton, \$1.65 to \$2.55 a pound; potassium bromide, 45 cents to \$4.25 a pound; blue vitrol, 7 to 22 cents a pound; chromatic acid, 75 cents to \$2.25 a pound; mercury, 75 cents to \$1.50 a pound; nitric acid, 5 to 10 cents a pound.

Matrix paper and matrix tissue paper have doubled in price. Wrapping paper has jumped from \$3.75 to \$8.50, while good roofing paper has gone up 40 per cent in two years. Twine used in tying bundles of paper for shipments out of town has doubled in price.

CREOSOTED LUMBER FOR FARMERS.

The small consumers of lumber are not expected to know the details of its best use. Part of the new conception of lumber merchandising is to give the user more facts and information on which to select and properly use the wood he needs for home building purposes. Not a small part of this is concerned with proper preservative treatment. As an aid to this end a new educational bulletin has just been issued by the National Lumber Manufacturers' Association of Chicago on "The Preservative Treatment of Farm Timbers." It is one of a series of farm bulletins, treating in a broad education way the proper design and use of farm structures.

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Price Bros. and Co., Limited.

A. AMY, Jr.
R. J. A. AMY.
G. ASSELIN.
BENJAMIN ALLEN.
ROSARIO BERGERON.
A. BERNIER.
R. B. BRUCE.
CHARLES P. BRUCE.
RAYMOND I. P. BARKER.
K. COSMAN.
STANLEY CADE.
E. C. CULLING.
C. CONLEY.
RONALD CADE.
WM. CARPENTER.
WM. CLARIDGE.
CHAS. CONNOLLY.
IRVING B. COREY.
ROBERT CRANSTON.
WM. DALE.
R. DONCET.
JOS. DELISLE.
ROMEO DOUCET.
G. C. DRURY.
J. C. EAGLES.
ROBERT EWING.

G. D. FALKENBERG.
JOS. FLOOD.
EDW. FLYNN.
ROBERT GREIG.
S. HARTLEY.
H. C. HICK.
J. HOOD.
ALEX. JOHNSTON.
HY. KEATCH.
CORN. KELLY.
S. A. W. KERR.
G. LANE.
EDW. LEDGER.
LAPIERRE.
E. LEDGER.
H. A. MOAT.
THOS. McDONALD.
PETER McNAB.
R. G. McKENZIE.
W. M. McCANDLISH.
H. MILES.
WALTER MILLS.
H. E. MILLIKEN.
H. A. MOATE.
J. D. OSWALD.
WM. PALMER.
H. D. POWELL.
ERNEST POUNDER.
D. RENNIE.
JAS. ROBERTSON.
J. A. RYAN.
CHAS. SHELDON.
GEO. SHELDON.
W. TANSLEY.
L. THOMPSON.
GEO. WISHART.

Don Valley Paper Co., Toronto.

HARRY HYDE.
E. FLANNIGAN.
L. FLANNIGAN.
W. SHERRIFE.
S. HOPE.
JOE. RAYNOR.

RIORDON PAPER LISTED.

The \$4,500,000 common stock of the Riordon Pulp & Paper Company has been listed on the Montreal Stock Exchange. The stock was recently placed on a 4 per cent basis.

In 1915 the Riordon Company showed net earnings of 3 per cent on its common shares, with the average market price of pulp at approximately \$38 per ton.

At the time when pulp prices made their first marked advance, the Riordon Pulp & Paper Company had approximately 10,000 tons of its 1916 product for sale. A large portion of this 10,000 tons has already been disposed of at high prices and it is understood that the company recently sold a large amount of unbleached sulphite pulp for 1916 delivery at prices ranging from \$100 to \$105 per ton. As against this, prevailing selling prices of unbleached sulphite pulp in 1914 were \$38 per ton and in 1915 \$37 per ton.

With unbleached sulphite pulp selling at over \$100 per ton and in addition, with the company's reduced manufacturing costs now in effect, it is claimed that recent estimates of earnings at the rate of 18 per cent this year will prove conservative. There has been gossip recently that as a result of present large earnings some action may be taken in regard to the payment of a bonus or an increased common stock dividend at the next dividend meeting of the company.

Gold, silver and paper money, and negotiable instruments and realizable securities have been declared contraband by royal British proclamation at London.

THE PAPER INDUSTRY OF SPAIN.

The extensive paper industries of Spain are largely centered in Catalonia, where, established for centuries, they have developed with the discovery of printing and modern methods of paper making to their present flourishing condition. The value of the production in vellum and rag paper is about \$1,260,000 annually, of which a little over 20 per cent is exported. The chief foreign markets are Cuba, Chile, and Argentina. In the western part of this consular district straw paper is manufactured for both domestic consumption and export and is used chiefly for wrapping and newspapers. The principal mills for cigarette paper, tissue paper, and paper for wrapping fruit are in California, and there are also two important mills for ordinary stationery in the Province of Gerona and others at Zaragoza. Much wood pulp is imported because, aside from the scarcity of wood in this district, the trees most grown here are not suitable for paper making.

The production of paper of ordinary grade in rolls is about 50,000 tons annually and of better grade in rolls about 27,000 tons. But this production has been reduced and is now controlled by a syndicate of paper manufacturers in Spain limiting output against over production, which at one time threatened to paralyze the industry. The exports from Barcelona of ordinary paper in rolls amounted in 1914 to 215 metric tons, handmade paper 847 tons, letter paper and envelopes nearly 6 tons, and cigarette paper 2,690 tons. Cuba and Mexico were the greatest purchasers of cigarette paper.

IMPORTANCE OF ACCOUNTING IN PULP AND PAPER MILLS

By ROWLAND W. JOLLY.

A Realization of the Importance of Cost Accounting Has Awakened Considerable Interest Regarding This Subject Among Mill Owners—Ideas Suggested by Some of the Most Prominent Accountants in the Industry.—The Wrapping Paper Manufacturers Association is Making Rapid Strides Towards the Perfection of a System of Cost Charges

(Written Specially for the Pulp and Paper Magazine).

(Continued from last issue).

Most accountants of the present day agree that the three factors in arriving at costs are, material, labor and overhead. These three items, while the basis of all calculation and analysis, are manipulated in many different ways. For example, in paper made from rags or jute stock, the labor and overhead would be followed through the thrashing and assorting rooms, through the dusters, the cooking machines, the washers, the bleachers and finally into the drainers. This entire process is necessary to make the rag pulp or half-stuff. Where wood pulp is used in the making of paper, the process differs somewhat, and is often more complex, but the application of the labor and overhead principle for the arriving at costs is the same as it is in the case, where rags are used.

Having ascertained what expense there has been necessary in making the half-stuff, the accountants advise that the next step should be to consider the cost of the rough paper. This means calculating in with the pulp, the rosin size, or other size, and whatever other chemicals are used. Considerable labor is being expended while the paper is going through the process of being made, for the pulp must move from the beaters to the stuff chest, through the refining engine and on to the paper machines. After the paper has passed over the driers, there is always considerable danger of loss by the sheet breaking while it is being wound on the winder. This "broke," as it is called, must be reckoned in with the cost of producing paper. After the paper has actually been made, it must go through various processes of finishing, viz.: loft dried methods, plating, calendering, cutting, sorting, counting and sealing. Then, of course, the expense attached to packing and shipping must also be considered.

The wise cost accountant's work actually extends to the sales department, though very few have ever recognized this. While this may sound somewhat strange, it can easily be explained. Paper makers admit that whenever they start to run on a different kind of paper, or are compelled to change the color of the run, it is done at a cost \$50 or more. In other words, it is impossible to change the weight or furnish of a sheet and immediately obtain a paper which will meet the specifications named in the order. In recent years, this expense has become a big factor in the cost of making paper because manufacturers have shown a willingness to accept specifications of practically any sort in order to get business. The result is that, in dull times, a mill will not work very long on any particular run, but will be changing constantly and, with each change, is forced to go to a considerable expense.

The ridiculousness of this policy is now being recognized and manufacturers are trying to remedy it by adopting standard sizes and weights and possibly even colors. If writing papers were all standardized,

there would be little trouble because of special orders etc. In fact, the extra expense of experimenting with the sheet to get it to meet the specifications would be entirely eliminated before very long. The machine would be able to run on a single kind of paper some time, thus reducing the cost of manufacture considerably, and also making the sheet more uniform. At the present time, there is a movement being fostered by the Writing Paper Manufacturers' Association to adopt such standards as have just described, and the reasons which have been mentioned.

In reckoning the cost of operation, the power plant which provides the steam and power to the actual working units and the repair department, which furnishes service to those units, must also be considered. Every department using steam or power should be charged with its correct proportion of the cost of operating the power plant, and every department having repair work done should be charged, not merely with the wages of the repair men, but also with a fair proportion of the expense of operating the repair department, just as an outside company would add something to the wages of its men to cover the cost of its shop.

The cost of every repair job should be recorded and charged to the department in which the work is done, so that the man who is responsible for the efficient operation of the department will constantly watch the repair charges.

For many years, there has been much discussion regarding the question of how a paper mill which controls its own plant, should charge the pulp received from that plant. In fact, even at the present day, we believe that there is no uniform way of making these charges. Some manufacturers charge the pulp to the paper mill at the actual cost of making, while others think it best to charge it on the basis of the prevailing market quotations. It is needless to say, that the fact that different methods for charging pulp are employed by different concerns has already resulted in marketing prices which are lower than should be the case. Accountants have been discussing the matter for years without arriving at any definite conclusion. In fact, a recent report on the subject, made to the members of the Wrapping Paper Manufacturers' Association, treated the subject in a way which has been conceded to be very judicious and worthy of wide promulgation.

In this report, it is maintained, that it is an axiom in good accounting practice that no one department of a business should make a profit or sustain a loss at the expense of, or for the benefit of, another department of that business, but that all inter-department charges should be made strictly upon a cost basis. Referring to the pulp case, it believes that any other method of procedure would obviously be improper, since if pulp

are charged to the paper mill at a profit, then the business as a whole, at the end of any given period, would show, in its profit and loss account, an unrealized profit on pulp which happened to be on hand in the paper department, either in the form of pulp or included in the finished paper and, conversely, if the pulp were charged to the paper department at less than the actual cost then the paper department inventories would be undervalued and the profits of the business as a whole would be correspondingly undervalued.

It maintains further that the argument is frequently used that where a department is making a salable product for another department of an enterprise, that the primary department is entitled to credit for its product at market value, and that only in that way is it possible to know whether the business is making or losing money by maintaining such a primary department instead of purchasing a similar product in the open market. The report contends that the same end is attained by crediting the primary department with its product at manufacturing cost and by compiling, only as a matter of statistical information, the approximate amount of the saving which the operation of that department effects for the business as a whole, and, moreover, when none of the product of such a primary department is purchased in the open market, it is usually a matter of estimate and conjecture as to the price at which the primary department should receive credit for its product, if it is desired to give credit for the production at "market" prices.

Regarding cost accounting in pulp mills, the Wrapping Paper Manufacturers' Association suggests that the main divisions of a pulp mill are: (1) wood yard; (2) wood room; (3) sulphite plant; (4) bleaching plant. Each one of those divisions should be charged with the direct operating costs of that division together with the whole of the following items (if the pulp mill is operated as a separate business), or with a proportion thereof (if the pulp mill is operated in connection with a paper mill), viz.: (1) power plant expense; (2) water supply expense; (3) tool and machine room expense; (4) barn expense; (5) general manufacturing expense; (6) the proportion of general administration expense applicable to manufacturing operations (7) depreciation.

The committee of the association believe that the following distribution of expenses, if the pulp mill is operated in conjunction with a paper mill, should be made:

(1) Power plant expenses should be pro-rated over the several main divisions of the business upon the basis of the horsepower used.

(2) The water supply expense should be pro-rated upon the basis of the gallonage discharged.

(3) Tool and machine room expense. The materials used and direct labor should be charged directly (by job numbers) to the pulp or paper departments in so far as possible. Unabsorbed tool and machine room expense should be pro-rated over the departments upon the basis of the percentage of the aggregate direct labor in each to the total productive labor in the plant.

(4) Barn expense should be pro-rated according to the approximate hours of use of horses for each department. In cases where motor trucks are used the total of the labor expense of up-keep and depreciation should be pro-rated in the same manner.

(5) General manufacturing expense, including maintenance of ground, light, repair materials and labor, personal injuries or insurance, cost covering same, time of watchmen, general labor, laboratory, storeroom and drafting-room expense, sundry supplies and expenses, proportion of barn or motor expense, etc., should be pro-rated between the pulp and paper mills upon the most equitable basis having regard to the local conditions in each plant. Hours of productive labor is the basis most commonly used.

(6) The proportion of general administration expenses chargeable into manufacturing costs should, if possible, be charged directly to the department affected or be pro-rated between the departments upon the same basis as general manufacturing expense.

(7) Depreciation should be separately arrived at by departments on the basis of the unit of output, as previously recommended in this report.

The report further cautions against including interest as a part of the manufacturing cost, since such a practice is unsound in principle for the same reasons as those mentioned in connection with the question of charging pulp to paper mills at prices in excess of cost.

The Wrapping Paper Manufacturers' Association also take up the matter of caring for the main divisions of the pulp department of the business. First, it considers the items which are to be charged under the head of the wood yard. These include, charges for unloading and piling, for labor and material in connection with repairs and replacements of booms, hoists and engines, oils, wastes, supplies, etc. The total cost is absorbed in the wood account and the total value of the wood account, divided by the total cords, furnishes the average cost per cord at which the wood is charged into the wood room account.

The following suggestions are made for the constituents of the wood room account: (1) Cords of each kind of wood at the average cost per cord from the yard. (2) Labor of haulers, sawyers, barkers, trimmers, splitters, chippers, conveyor men, general labor foremen, etc.; also for oils, waste, knives, saws and supplies. (3) Repair labor and materials. (4) Proportion of power plant and barn expense. The aggregate cost, as thus obtained, is divided by the number of cords of chips produced in order to obtain the cost per cord, at which figure the chips are charged into the sulphite department. The waste transferred to furnace room should be charged thereto on the basis of its value as fuel and credited to wood room.

In order to reckon the aggregate costs in the sulphite department, the accounting committee suggested that these charges be considered: (1) Cord of wood chips at average price per cord as determined in wood room; (2) stone; (3) sulphur; (4) labor of acid makers, digester men, cooks, koller gang, screenings, wet machines, general labor, foremen, general superintendence; (5) supplies, expenses and repairs, covering oils and waste, screen plates, felts, sundry supplies, sundry expenses, repairs, material and labor; (6) proportion of insurance; (7) proportion of taxes; (8) proportion of power plant expense; (9) proportion of water supply expense; (10) proportion of general manufacturing expense; (11) proportion of administrative expense; (12) depreciation applicable to sulphite plant reduced to tonnage basis. The sum total of these charges is divided by the tons of sulphite produced finding thus the average cost per ton of unbleached sulphite. In the case of bleached sulphite,

consideration of the following items, added to the cost of unbleached sulphite, are required to find the cost; bleaching materials, labor, supplies, repairs, materials and labor, proportion of water supply, proportion of power plant expense.

It is worthy of considerable note that the committee of the Wrapping Paper Manufacturers' Association, in reviewing its work, declares that it would be impracticable to attempt to formulate a detailed plan for arriving at costs in pulp mills. However, it does express belief that if the various costs systems are based on the ideas given above, they will have enough uniformity to do much to stabilize the industry and eliminate considerable of the unintelligent competition which is common during periods of dullness.

A prominent accountant, in discussing the essentials in paper mill cost accounting, takes up the question of Burden in a very concrete fashion. He says, by way of illustration, suppose you were to occupy a mill completely equipped with machinery and furnished with heat, light and power at a rental of \$10,000 per month. This rental you would certainly charge against the cost of operating your business, and you would not consider that you had made a profit until this amount had been taken into account. Now, what items of expense does an analysis of this rental disclose? First, the landlord has been compelled to pay taxes on the land, buildings and equipment; he must carry insurance as protection against fire, incur the cost of producing power, heat and light, keep the plant in repair, provide for its inevitable decay or obsolescence, and lastly the landlord must get interest on his investment, and pay the cost of looking after the property, before he has realized a profit. If the paper maker should operate under these conditions, he would be relieved of the responsibility of the landlord by the payment of rent, and be engaged only in producing paper.

However, when you are the landlord, as well as the manufacturer, you incur the charges which are incurred by the land owner. Most likely, you will also be a manufacturer of heat, power and light. So, in order to make sure that you are not making money as a landlord and losing it as a paper maker, it will be necessary to analyze the various functions which you perform and determine the expense of performing each of them. After such an analysis has been made, the matter of accounting becomes fairly simplified. The chief thing is to recognize all expenses and distribute them, and also to charge them in full to the respective products which the mill makes by some just method.

Cost accounting reveals many things. If a cost system is properly handled, all of the defects in the operation of the plant will soon become visible to the expert. For example, in some plants, it might be discovered that the lack of cleanliness has been causing considerable loss in many ways. In a number of cases, it has been known that managements have become so accustomed to the filthy conditions existing about their plant that they accepted them as a matter of course. A proper cleaning has often resulted in the saving of thousands of dollars and in converting the workmen from a disgruntled lot, to a pleasant and contented set of men.

In expanding, a number of mills have added new buildings and installed new equipment without taking into consideration all of the factors. This has resulted in a lack of consistent arrangement, which causes the cost of operation to be unnecessarily large.

A good example of this is given in the following illustration, which has been suggested by a prominent accountant:

A certain mill, producing its own supply of sulphurous acid, built a substantial shed for the storing of its sulphur and other supplies adjacent to the old digester building. Some time later, some new buildings were erected about two hundred yards distant, in which new boilers and tanks were placed while the old digester plant was dismantled and the building used for other purposes. The new sulphur burning ovens were installed in a building yet further distant from the old one, and during that period of time, the sulphur and other supplies have been conveyed in barrows over that extended distance, where the sulphur house could have been removed, for but slight expense, to an empty lot adjacent to the over and many a good dollar saved thereby. In another mill, the chipping machine was set on the side of a large room opposite to the door from which the logs were unloaded from cars. The logs had to be carried over to the chipper, and from there, after sifting, conducted across the room again and on through the way to the adjoining digester house. Needless labor and additional power was required to operate the extra length of conductor.

To go into the matter of cost accounting in detail would require a great deal of space and considerable time. The subject is very much involved, and can be presented from a number of different angles. The ideas given above are worthy of serious consideration for they have been culled carefully from the work of some of the best authorities on the subject.

It should be understood that large sums of money are to-day being expended by different mills and groups of mills to put their cost accounting systems on substantial bases. And in every case, thus far, where the work has been properly handled, a saving of many dollars has resulted.

CANADA'S TIMBER WEALTH.

The following figures show Canada's timber wealth	
Lumber, laths and shingles	\$67,500,000
Firewood	60,500,000
Pulpwood	15,500,000
Posts and rails	9,500,000
Crossties	9,000,000
Square timber exported	400,000
Cooperage	1,900,000
Poles	700,000
Logs exported	850,000
Tanning material	22,000
Round mining timber	500,000
Miscellaneous exports	300,000
Miscellaneous products	10,000,000

Nearly 50 per cent more newsprint paper manufactured in the United States and Canada is being shipped abroad this year than last.

A majority of the Berlin newspaper proprietors have decided to reduce the size of their publications owing to the increasing cost of paper. Several of the newspapers have also determined to increase their subscription price owing to the same cause.

Don't put that bundle of old newspapers in the furnace or the trash burner.

Undeveloped Resources of the Upper Ottawa Region

By R. O. SWEETZ.

(Specially Written for Pulp and Paper Magazine).

This is neither the "boost" of a "spurious optimist" nor the wail of a morbid pessimist (both of which classes we are more or less afflicted with), but is a plain unvarnished statement of a few facts taken from the writer's field note book.

Great as are the better known resources, in timber and water powers, of the Lower Ottawa region, comprised within the area drained below Lake Temiskaming, they do not exceed the 10,000 square miles of undeveloped country in the Upper Ottawa region, extending from Lake Temiskaming to the Grand Lake Victoria Basin.

Whilst the Lower Ottawa has for generations been pouring out its wealth of pine timber to the world's markets the Upper Ottawa has remained untouched because spruce and not white pine has always been the predominant forest there. To-day there remains very little white pine in the Lower Ottawa, or indeed anywhere in Canada. Spruce there remains in abundance, but in localities where pine has been so plentiful, as in the Lower Ottawa, the spruce is naturally not growing in such pure luxurious stands as in the regions where pine has never predominated.

Thus we find to-day the Upper Ottawa Valley, which was never much of a pine country, a rich virgin spruce forest abounding in water powers, great and small, and ready to offer up its resources at a time when the pulp and paper industry is preparing to take a world lead in Canada.

To anyone who has not cruised inland from the rivers of the Upper Ottawa the wealth of spruce is unbelievable. Casual observers of the morbid pessimist class have been known here as elsewhere to cry calamitously, like the car window observer, because the whole timber wealth of the region did not roll out to the river banks for inspection. If the natural resources experts want to see timber, and especially spruce, it is necessary to leave the car window or canoe and get inland, usually a quarter of a mile at least, for the spring floods which overflow the banks of rivers and lakes prevent the maturing of large spruce in any quantity along shore. Besides winds contribute towards restraining a heavy growth to the water's edge. And along railroads the laxity of control in burning right-of-way cuttings, has often been responsible for long strips of burn both sides of the track. Once inland beyond the influence of these agencies the density of growth in the north country becomes evident.

In the Upper Ottawa I have found black spruce in thick growth, in areas of over a hundred square miles, which, when followed in their more or less irregular outlines, will average 10 to 15 cords per acre. Some sections of 10 to 25 square miles will yield 20 cords per acre and many localities of 100 to 600 acres contain 30 cords per acre. Actual measurements have been made showing 45 to 52 cords per acre on small sections, the number of black spruce trees of 7 inch upwards on such sections being as high as 520 to the acre.

The operating facilities of this whole region are particularly attractive owing to the possibilities of

steamboat navigation in stretches of 50 to 75 miles on lakes and rivers. The whole region of some ten thousand square miles can be reached with comparative ease and that active operations may soon be looked for in this section is quite probable considering that some thirty million cords of spruce, exclusive of several million cords of poplar stand ready for the axe.

All this wood may be cut, floated down and delivered, for a cost of \$3.50 to \$5.00 a cord, at the great water power sites of the Quinze River situated near the Temiskaming and Northern Ontario Railway, and one hundred miles nearer markets than pulp and paper mills now operating with eminent success.

In a distance of fifteen miles from Quinze Lake to Lake Temiskaming the Ottawa (or Quinze) River can develop powers aggregating 250,000 up. Besides this several other water powers farther up the main Ottawa can develop 5,000 to \$20,000 horse-power each.

SPANISH RIVER ADDING NEW GRINDERS.

The Spanish River Pulp and Paper Co., at Espanola, are increasing their capacity by installing four new grinders. These grinders are of the latest pattern and will take 30-inch wood. The foundations are complete and some of the grinders have been delivered.

This company is also installing two more Robb boilers with a capacity of 275 horse-power. These boilers will be equipped with the Murphy Furnace and Automatic Stoker. The building to take care of these boilers is completed.



HON. G. H. FERGUSON,

Ontario Minister of Lands, Forests and Mines. The disastrous fires in Northern Ontario have called fresh attention to the fire prevention measures in vogue in that province.

The Foes of Felts

(Translated from "L'Industria Della Carta," Milan, Italy, by the News-Print Manufacturers' Association).

The working durability of felts is an important question. The press felts and the wet felts have to meet two foes, viz., chemical action and mechanical pressure. These two disadvantages are always at hand with felts, and it is necessary to use great care to guard against them, as, by their combined action, they very soon make all felts unserviceable.

If the chemical action is strong mechanical pressure should be kept low; and vice versa, if high mechanical pressure is required, chemical action should be kept as low as possible. It is best, however, to keep both these destructive agencies at the lowest point.

Chemical destruction concerns, especially the manufacturers of felts and their customers, and they should, therefore, act according to their greater or lesser experience in this connection.

Coming to the question of mechanical pressure, in which the paper manufacturers are chiefly concerned, it is well, in the first place, to refute an accusation which is frequently and unjustly made against felt manufacturers, viz., that they supply an inferior article.

Felts deteriorate much more readily when they are dried at a high temperature, they should therefore be used and washed at a low temperature, and the soap and the acids employed in washing, should not be corrosive.

Felts become speedily worn out if they are allowed to dry when the machine is shut down. This is one of the reasons given for washing the felts on the machine, where they cannot dry.

A well known felt manufacturer, when he receives complaints about the short durability of his felts, enquires at once: "How many days a week do you work your felt?" For he knows well that the less it is worked, the less liable it is to damage. The consumers of felts should consult the manufacturers in order to avoid chemical destruction.

The mechanical foes are numerous, and the first is excessive tension. The pressure made by the driving is almost inevitable.

As it is known the felt is a band which drives several rolls which otherwise would not revolve. These rolls act as brakes to which is added the pull of the suction box. It is evident that the point of greatest pull is that nearest the press rolls, where there is a great back pull. Of course, one should consider what kind of bearings are used and what lubrication is employed on the shaft of the felt roll worked by the felt.

Many people think a long felt is better than a short one, but this in most cases, is far from the truth. If extra rolls are added to a long felt, there is no advantage. Let us suppose for example, that a felt of 45 feet is working with nine rolls; it is, by no means better than a felt of 35 feet that works with seven rolls. Indeed, it is not nearly so good on account of the resistance of the two additional rolls, which serve only to increase the pull near the press rolls. If a whipper is introduced the pull may be greater at that point because, at every revolution of the whipper, the felt is obliged to depart from the straight course, and

act imperfectly, and if it is too near the limits of ticity of the felt, it causes it to tear through excessive tension. In fact, the tension of the felt is irregular and often excessive. We think it would be easy to the roll, near the whipper, upon springs, so as to reduce the tension, introducing a gauge indicating tension of the felt, and gauges indicating the pressure of the water pump and of the suction box, especially when it is found that the felts wear out too soon. These are the only means by which one can ascertain under what conditions the felts work.

We now come to the second destructive agency, the wearing off of the felt. The suction boxes do not act only as brakes by retarding the movement of felts and increasing their tension, but they also wear the felt, if they have coverings with sharp holes. Many paper-makers discard suction boxes supplied by manufacturers, and substitute other kinds covered with slits, which in most cases, act like so many razors with a diagonal motion, which completely wear the felt. An improved suction box has been devised in order to avoid this great disadvantage and which stretches the felt. The nap of the felt is also removed by the action of the suction.

Whippers when they are of wood, soon become rough, through the moisture, etc., and the nap, which is removed, prevents the felt from being turned over a day. An improved felt whipper has now been constructed with bronze tubes, and, as it has no screws, keys, etc., it cannot come to pieces. The whipper should be fixed outside the felt, so that the latter is not become soiled, as the whipper works upon a car which makes all the dirt fly away. Another good reason for preferring the whipper to be outside is that it enables the felt to be more easily put in and taken out of the machine.

We think it is well to put "Shower" tubes inside the felt, because through the rapid action and working of the whipper, all dirt is driven out of the felts and sent out the same way it came. The wool of the felt holds it tight for a width of about double what is required by a Fourdrinier machine, and is even longer, and then it terminates at a certain width and length, and is dried at once. The width and length can only be maintained by careful watching.

The third mechanical enemy is the crown of the roll. This is due to the pressure between the pressing rolls and the weights employed, causing the deflection of the roll. The smoothness of the rubber which covers the rolls, acts as a preservative provided it is in good condition, of good quality and of equal consistency. In time the rubber becomes hard, and sometimes cracks acting very detrimentally to the felt which works upon the roll. The felt on account of the crown works principally in the middle, where it has a tendency to thicken. To prevent this, the rolls should be warmed in order to expand the felt and prevent the middle thickening. It has often been observed that greater weight is required on one side of the press than the other, and this depends upon the insufficient dryness, due to the absence of steam, low condensation, want of ventilation, etc., on the driers. The greater weight is required on one side of the press on one side. The excessive wear on one side of the felt may also depend upon the unequal consistency of the rubber, and this may be avoided by means of a plaster meter, or else by smoothing the roll on the sides.

paper is uniformly made on the Fourdrinier machine, and properly put on one side of the press, and the drying part is suitable for allowing the sheet to evaporate at the other end of the press, then the gap of the press between these two requires no attention.

Of course, some felts may be really imperfect or of inferior quality, and then all kinds of inconveniences may arise, but we think that these are due, in most cases, to a combination of the many causes we have enumerated.

Federal Trade Board Begins News-print Inquiry

New-York, August 12, 1916.

(Special to Pulp and Paper Magazine).

The Federal Trade Commission began hearings in investigation of the news-print paper situation on August 1. The commission was told by J. H. Zerbey, president of the Pennsylvania Associated Dailies, representing the National Editorial Association, that one paper-making concern was holding in storage a million dollars' worth of news-print paper, and that prices of paper were increasing day by day.

The investigation was ordered by the Senate to determine whether there had been an undue increase in the prices of news-print paper. The Commissioners have invited publishers of 2,000 daily newspapers and 100 weeklies to be heard. Special agents of the commission are now at work examining the accounts of the principal makers of print paper in the United States and Canada.

Presentation of the news-print manufacturers' case was made by Phil T. Dodge, President of the International Paper Company. Mr. Dodge said his company was producing one-third of the news-print now used in this country. He admitted that it was his company that was charged with having \$1,000,000 worth of paper in storage. This paper was being held, he declared, to make good the company's boast that it had never failed its customers on account of any calamity, whether fire, flood, or strike.

Mr. Dodge said his concern was about to build a new large factory, which it was forced to build in Canada because of present conditions inimical to paper manufacturers in the United States. He predicted that unless there was improvement in these conditions the entire industry would move from the United States into Canada.

All New Orders Refused.

Mr. Dodge explained that his company's reserve stock had been depleted from 37,000 tons to 17,000 in order to afford relief, and that all new orders, including contracts for nearly 100,000 tons from abroad, had been refused. The great difficulty, he said, was that a very sudden and unexpected demand, increasing the country's paper consumption over 20 per cent in the last year, had entirely outrun the total available supply. Moreover, nearly every item of expense in manufacture had been increased, and the import of timber bought in Canada for manufacture here had been forbidden by the Canadian authorities shortly after the American duty on Canadian paper was removed. No new mills had been built in the past year, he said, as it was impossible to make a fair return on capital.

F. P. Glass, Vice-President of the American Newspaper Publishers' Association, said that the publishers in his association were morally certain that there was collusion among the manufacturers to force up the price of news-print paper. He promised that within sixty days the association would place in concise form before the commission its finding after investigation, and he said he believed this would prove to be legal proof that a conspiracy existed among the manufacturers. Many papers are losing all profits, he said; a number must go out of business. A number of mills are making paper cheaper than ever before, his association has learned, according to Mr. Glass.

Mr. Zerbey testified that some papers had been unable to get a sufficient supply of paper because brokers could not make deliveries. He said he managed to get out his paper by holding down to six pages, throwing out advertisements. He asked for information on the situation from thirty or forty manufacturers, and received only three replies. This correspondence showed him, he said, that the manufacturers had a clearing house of information.

Size of Papers Cut Down.

Mr. Zerbey said that some members of the association he represented have been forced to urge their advertisers to cut down their space. He cited instances in which the publishers had been forced to raise the price of their papers. He said that he and others would like to, if they could do so without throwing away their circulation. Mr. Zerbey brought out that under the tariff laws Canadian mills cannot charge more than \$2.50 per hundred pounds for print paper in the United States. He thought this a challenge to United States manufacturers.

The publishers, said Mr. Zerbey, would be willing to pay a small advance in price. He said that one cause of increased price was the heavy selling force employed.

"Why employ them if there is a shortage of paper?" he asked.

Mr. Zerbey charged favoritism in the sale of paper, and declared present prices varied widely, according to the whim of the manufacturer, the discrepancy running from 2 to 6 cents a pound. He added that while some publishers could hardly buy paper for cash, even at exorbitant rates, others had made two year and three year contracts at favored terms. He thought it apparent that manufacturers had united to force users to deal only with the mill they were accustomed to patronize, and that any further increase in price would force many papers under 20,000 circulation into bankruptcy.

The commission expects to make its report by Oct. 1.

DRYDEN TIMBER AND POWER CO.

The Dryden Timber and Power Co., Ltd., have purchased a 96-inch Fourdrinier Machine to make house liners for their western customers. This with other improvements will increase their capacity to 120,000 lbs. in 24 hours.

A new ventilation system is to be installed in the Black Ash building, which is another expression of the desire of Mgr. Beveridge to improve the working conditions for his men.

Yaryan Evaporators are also being installed to relieve some of the load which the Swensons are now carrying.

Chemists and Technical Men to Meet in New York

Official announcement of the meeting of the American Chemical Society, to be held in New York, September 25 to 30, in conjunction with the Second National Exposition of Chemical Industries, will be issued to the members by Dr. Charles L. Parsons, secretary, on August 15. Dr. Charles H. Herty, of the University of North Carolina, president of the American Chemical Society, will open the exposition on Monday, September 25, at two o'clock in the afternoon, with an address reviewing the history of chemistry and the chemical industries in this country and outlining developments since the outbreak of war in Europe. The presidents of co-operating societies, such as the American Electro-Chemical Society, the American Institute of Mining Engineers, and the American Paper and Pulp Association will follow Dr. Herty with speeches of welcome and reviewing the progress made in the industries represented by them.

The first general session of the American Chemical Society will open at Columbia University on Tuesday morning, September 26, and arrangements are being perfected for a public meeting in the large hall of the College of the City of New York on Tuesday afternoon, when addresses will be made of general public interest pertaining to the interesting developments in the field of applied chemistry during recent years.

The programme of the week's meetings will provide for general conferences on subjects in which the chemists of the country are now interested, and it is intended that the lecture hall of Grand Central Palace and Rumford hall in the Chemists' Club building will be occupied each afternoon at the same time by one or other of the different divisions of the society for the discussion of such industrial topics as the production of dyestuffs, medicinal chemicals, industrial alcohol, the manufacture of paper pulp and by-products, oils and motor fuels, glassware and porcelain, steel alloy metals, new developments in chemical industries, etc.

On Wednesday and Thursday mornings a general symposium on colloids will be held, theoretical considerations being discussed on the first day and the industrial applications of colloid chemistry on the second day.

The American Electrochemical Society has planned a series of interesting meetings. The electrochemical group will open its meeting later in the week, on Thursday, September 28, with a technical session devoted to a review of American progress in the electrochemical industry. A complimentary smoker will be held on Thursday evening, and on Friday evening there will be a joint banquet at the Waldorf-Astoria of the members of the American Chemical Society, the American Electrochemical Society, and the Technical Association of the Pulp and Paper Industry. This will be a subscription banquet and the price of tickets to members will be \$3.50; additional tickets for guests will be obtainable at cost, or about \$7.

In 1914 there was imported into Spain through the port of Seville 2,436 short tons of paper and pasteboard, and in 1915, 2,877 short tons of similar materials.

Paper Making in Egypt

The Egyptian Gazette, in its issue of April 5 stated:

Egypt once kept the greater part of Europe supplied with paper. At first, it was made of the cell pith of the papyrus laid in strips side by side and a further layer laid above the first crosswise; the work was then damped with Nile water and pressed. Later the Arabs made paper from rags, and among the names given to it was "charta cattunea," because it had a cottony appearance, which gave rise to the idea that at one time paper pulp was made here from cotton wool. So much paper was made and exported from Alexandria at one time that the Emperor Hadrian was particularly impressed when he visited the country with the great and flourishing trade in this article.

It is strange to reflect that after having been the home of paper, Egypt is to-day absolutely dependent on her imports of this material. The question naturally arises, Is it possible for Egypt once more to make herself at least partially independent in this direction?

Paper making is a highly specialized industry specialized in that every maker keeps to certain lines and develops his plant to produce out of the material at hand certain quantities at the cheapest rate. He is unable to compete if he tries to produce too many kinds at his mill. This is particularly noticeable in the enormous development in the last twenty years of the news mills, where every detail of the huge modern plants is arranged for making one quality of paper only. In such a mill there would be perhaps, five or six machines, each turning out every minute of twenty-four hours of the day 750 feet of paper in width on each machine of 150 to 180 inches.

From forest to breakfast table, the production of the newspaper is a romance of the highest order. Yet these same specialist mills would be all at sea if they were expected to produce a sheet of, say, ledger or tissue paper. The result of such an attempt, even if the managers knew the requirements of the market, would be to turn the whole mill in about five minutes into a huge waste paper basket.

If, as was remarked above, the paper makers endeavor to produce out of the material nearest at hand what material is there in Egypt to induce the manufacture of this necessary article in the country? Can not such material as rice, straw, sugar cane stalks, banana leaves, etc., be used?

Question of Material.

Experts have, for many years, experimented with all classes of plants in order to test their value as paper making material, and much valuable information has been gathered from these experiments. But after a certain stage of experiment has been reached the same impasse is always arrived at. The fibre of a plant may, under treatment, yield a beautiful cellulose pulp desirable in every way, but further investigations prove that the amount procurable is too small and uncertain, and the difficulties of collection and transport prevent the development of the scheme into a commercial success. Furthermore, the competition of the wood pulp mills is always in the way.

Having mentioned some of the obstacles, let us turn to some of the possibilities. In Egypt, linen and cotton garments comprise the bulk of the clothing of a

Paper is used in Cairo and all the big cities towns as much as in any European country. Therefore, a huge daily disposal somewhere of rags waste paper. What becomes of it? With these sets of materials, leaving out for the moment any doubts, there are possibilities for the development of an important and thriving trade.

One material found, what are the further requirements to start a paper mill? There must be power — either water power or steam power — and an abundant supply of fresh or filtered water. Paper mills are heavy users of power, and those with good water power have a considerable advantage. To make a paper mill a success in Egypt, water power would be almost a necessity because of the prohibitive price of power even in normal times. Why not, therefore, harness the Nile at the barrage to obtain the requisite power? Steam would have to be used to a certain extent for drying, bleaching and a few minor processes, but this would not amount to a great expenditure of capital. The other materials required would be resin, sulphate of lime, alum, aniline dyes, gypsum, etc. One of these products, at least, is already obtainable in Egypt, and the manufacture of one or two others might lead to the development of new industries. If the collection of rags and waste paper were organized in the big cities, there would be enough material to make many grades of wrapping paper, and even to send, after a time, into the higher grades of writing and cartridge papers. The domain of news, however, could never be invaded, from the impossibility of competing with the wood pulp producing world.

An Allied Industry.

Side by side with paper making, the industry of the merchant could be developed. This occupation is often looked upon with repugnance by many who imagine it to be only relegated to the lowest types of individuals, but it is certainly one in which sound judgment and experience are required. If the organization of this form of waste were adequate and intelligent, the commoner qualities could be used by a budget paper mill, while for a time, until they could be sold here, the more valuable sorted white linens, etc., could be exported and find a ready sale in, say, the high grade mills of Italy.

Plans for maize and rice straws and other vegetable residues, if the obstacles already mentioned can be got over, these can also be profitably used for certain kinds of paper; the essentials for success whatever materials used being (1) sufficient quantities, (2) easy and cheap transport, and (3) cheap power. Given power on the Nile and Nile transport or cheap railway rates, an experiment in paper making in Egypt ought to be a success, even taking into consideration the fact that for the extensive plant required in a paper mill a fairly large amount of capital is necessary. — The London Paper Maker.

AIDING AMERICAN TOURISTS.

One hundred and thirty thousand maps of the United States National Forests will be distributed to tourists this summer. These maps show the best camp sites, good hunting and fishing grounds, roads, trails and telephone lines, and give directions how to reach points of interest.

The News-print Situation

Official statistics submitted at the enquiry into the news-print situation at New York a few days ago, show that the production of the Canadian mills in June was 45,790 tons, against 35,169 in June a year ago, and the shipments 47,847 tons, against 37,062 tons—an increase in each case of approximately 30 per cent.

Although the output for the first six months of the year was virtually at the rated maximum capacity of the mills, shipments were 268,728 tons, against a production of 263,456 tons, and stocks on hand were reduced about 9,000 tons. At the rate of production in the first six months of the year, the Canadian output for the year should be about 526,000, or nearly 100,000 tons more than in 1915. At a 2.50 quotation this would represent an added value to the Canadian output of about \$5,000,000.

The Canadian figures as given by the secretary of the News-print Manufacturers' Association, show the following statistics as to capacity, output, shipments and stocks, all in tons, for the first six months of 1916, and the corresponding figures of June a year ago:

Month.	Max. capac.	Output.	Shipments.	Stocks
January	43,950	41,817	37,944	29,831
February. . . .	43,950	41,833	41,244	30,485
March	47,466	45,396	46,902	28,979
April. . . .	43,950	41,572	46,785	23,766
May. . . .	48,627	47,048	48,006	22,824
June. . . .	46,826	45,790	47,847	20,767
1915—				
June. . . .	39,286	35,169	37,062	30,836
Combined figures of American and Canadian mills, under the same heads, follow:				
1916—				
January. . . .	145,115	130,330	126,405	84,086
February	141,225	124,399	122,956	86,101
March. . . .	152,523	136,506	143,207	80,502
April. . . .	141,225	129,432	142,873	67,998
May. . . .	153,684	143,426	143,965	69,137
June	146,822	140,151	145,437	65,194
Six mos. . . .	880,595	804,253	824,843	.....
1915—				
June. . . .	143,130	113,003	120,497	92,967

At the present time in the United States and Canada fifty mills are working three shifts of men eight hours daily and six days a week. Their output for June—the last compilation—was 140,151 tons, representing 95.4 per cent of their maximum production, the highest efficiency ever attained in the industry, it is pointed out. This output represents an increase of 27,000 tons a month over the mark for June, 1915, but even this tremendous increase has been insufficient to feed the demand. Full production has had to be augmented by 5,000 tons more a month, which was drawn from a rapidly depleting reserve stock.

Surplus stock has been swallowed up at this rate for several months now. At the end of June only 65,194 tons remained in storehouses that at the same time last year held 92,967 tons.

Prices for print paper in the United States have risen 50 per cent in the last two years.

International Paper Company Warns Customers

The following extracts are from a circular recently sent out by the International Paper Company to its customers urging them to conserve their supplies of paper. The Pulp and Paper Magazine is indebted to the News-Print Manufacturers' Association for its copy:—

"There has now come a time when an accounting of our resources is forced upon us. Your demands (and we speak of our customers as a whole) have grown to such an extent that in order to comply with them we have eaten into our reserve stock to an alarming extent. It was our hope that soon after the first of June, as has been the case in all previous years, the consumption of Printpaper would markedly decrease and we would thus be permitted to build up our reserve tonnage to normal. In June you called upon us for 1,310 tons more than we produced. We then looked forward hopefully to July expecting that in this month the tide would turn, but in the first twenty-one days of the month you have taken approximately 1,000 more tons than we produced. So all signs have failed with us and with sincere regret we are forced to the conclusion that it will be a practical impossibility for this Company to produce during the last four months of the year as much paper as will probably be required by its customers, unless you arrange beginning at once to materially reduce consumption.

We are running every one of our machines to full capacity making daily a tonnage of paper largely in excess of normal tonnage. We have room for growth in but one of our United States properties, that being our Otis Mill located at Chisholm, Maine. We are installing at this mill a large paper machine which we hope to have in operation by December. And this means the limit of our ability to produce Printpaper in this country. If we had water-power and other requirements available at other points in this country we would immediately take advantage of the opportunity to install further machinery, but we have none. We have resources in Canada which we propose to utilize when enabled to purchase machinery and other equipment at favorable prices. This company is planning to develop one of its Canadian properties to a material extent as you have probably noted in the reports published by the press, but it will be a matter of some time before we will be making paper.

Upon January 1, 1916, we had an inventory of 24,116 tons. To-day we have an inventory of approximately 16,000 tons. The normal inventory is 35,000 tons.

TO MAKE LACE PAPER.

A \$100,000 concern, the American Lace Paper Company, has been incorporated to manufacture fancy paper in Milwaukee.

The International Paper Company has refused foreign orders for nearly 100,000 tons of news.

JOINS ABITIBI COMPANY.

Mr. J. Wiener, formerly of the Laurentide Company Ltd., Grand Mere, P.Q., has assumed the duties of Master Mechanic at the mills of the Abitibi Power and Paper Co., Iroquois Falls. Mr. Wiener at one time was Master Mechanic for the Minnesota & Ontario Power Co., at International Falls, N.Y. From there he went to Mississippi, having in charge large construction work at that place. His next position was at Grand Mere where he superintended the construction of their new power plant. Prior to going to his present position he spent two months on the construction of the Pittsburg Plant of the Asbestos Protected Metal Company.

From the above it is seen that Mr. Wiener has had extensive experience in mill construction as well as mill upkeep and Abitibi are fortunate in securing his services.

SWEDISH PAPER MILLS RUNNING AT TOP SPEED.

The Swedish-American Chamber has sent out inquiries to well initiated members regarding the present condition of the Swedish paper mills, and has received, among others, the following interesting information:

"To my knowledge the Swedish paper mills were running at top speed at my time of departure a few weeks ago.

Prices for paper, no matter what kind, have advanced so considerably that, in spite of the high coal prices and the extreme hardship in obtaining the necessary raw materials to keep the mills going at the present level for the finished product, paper making is a very profitable business.

Regarding kraft paper, the price before the war for this commodity was something like £12/13 per ton f.o.b. Gothenburg, or in Swedish money at the present rate of exchange Kr. 180/200. In May sales were freely made in Sweden at Kr. 700—i.e., practically four times the price before the war, and by this time perhaps Kr. 1,000 has been paid."

NEW PAPER MILL FOR MANITOBA.

A pulp and paper mill will shortly be erected at Grand Rapids, Manitoba, a town some 250 miles northwest of Winnipeg. The company control large timber areas along the Saskatchewan. The head office will be in Winnipeg, and according to information received the enterprise will be managed by Mr. D. B. McDonnell.

A TIP FROM LIFE.

Every Sunday newspaper ought to give a cake of soap with its half-tone supplement.

The picture supplements on coated paper are the dirtiest things that come into clean houses.—Life.

Approximately 330,000 cords of wood waste with a value of \$1,400,000, were utilized by 35 of the 200 pulp and paper mills of the United States. It is thought that as the price of cord wood goes up, the amount of wood waste used will become greater.

2,000,000 envelopes and 5,000,000 letterheads have been sent to Mexican border for use of United States troops.

CHAIN YOUR DOCTOR.

In one of the Ontario Mills recently, one of their employees lost a leg, due to a calender doctor falling. The injured man was performing his duties at the calender stack and without provocation one of the castings supporting a doctor broke permitting the doctor to fall, striking the workman on the leg, crushing it so that amputation was necessary.

While this sort of accident is very rare it shows that great care must be exercised in inspecting these castings. The company immediately chained all doctors to the frame of the stack. This gives absolute protection against a similar accident. We are calling attention to this in hopes that it may be a warning to other mills.

A new building is being erected at the Spanish River Pulp & Paper Co., at Sturgeon Falls, P.O., to house four drum barkers which will replace their present disc barkers. The foundations have been poured and construction work is going on at a rapid pace.

There are now five paper stocks listed on the Montreal Stock Exchange, viz., Laurentide, Price Brothers, Spanish River, Wayagamaack and Riordon.

PROVINCIAL MILLS TO EXTEND.

It is understood that the Provincial Paper Mills Company, Limited, of Toronto, with plants at Mille Roches, Thorold, and Georgetown, Ont., is contemplating building a new mill at Mille Roches. One machine will likely be 160 inches wide and the other 164 inches wide. This will increase the production of the company's plant by about forty tons a day. The present daily capacity is sixty-five tons.

ARGENTINA'S PAPER IMPORTS.

Argentina's imports of news-print paper in 1915 aggregated 56,408,841 pounds valued at \$1,481,004. Her imports of writing paper in the same year aggregated 4,178,433 pounds, valued at \$274,261, while in the same year she imported 7,765,263 pounds of book paper, valued at \$529,440.

ENGLAND'S TIMBER IMPORTS.

In time of peace England's timber imports were valued at about \$215,000,000 a year, and this figure gives some idea of the amount she has needed since the war started.

SAVE YOUR MONEY

FOR THE

DOMINION WAR LOAN

TO BE ISSUED IN SEPTEMBER.

By purchasing a bond you will help to WIN THE WAR and obtain for yourself an investment of the highest class yielding a most attractive rate of interest.

DEPARTMENT OF FINANCE
OTTAWA.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, August 14th.

The estate of John S. Riegel, late president of the Union Bag and Paper Company, and the Warren Manufacturing Company is valued at 500,000 in the will, which was filed for probate on July 19. The entire estate is bequeathed to his widow, two sons and two daughters. The Easton Trust Company is the executor.

* * *

The Ohio Paper Products Company of Massillon has been chartered with a capital stock of \$10,000 by M. R. Bissell and F. C. McLain, who will have others associated with them in the enterprise. The company will probably erect a plant for the production of the various products manufactured from paper.

* * *

Announcement was posted at the Mount Holyoke Tissue Mills recently to the effect that the company had readjusted the working hours, making a reduction of from 55 hours a week to 50 hours. It is known as a nine-hour day and was made voluntarily on the part of the company. The reduction in the number of working hours became effective July 24, and wages will remain the same as heretofore.

* * *

The Eddy Paper Company of White Pigeon, Mich., will install a new machine. Some of the parts have already come from the Beloit Iron Works. Four new stuff pumps have also reached the mill and will replace those now in use. The pumps that will be taken out are to be repaired and used on the new machine.

* * *

Hans Lagerlof, of the Scandinavian-American Trading Company, New York, sailed for Christiania on July 26, aboard the steamer Frederick VIII. Mr. Lagerlof will be away several months completing business arrangements in the Scandinavian Countries.

* * *

Work has been started on an addition to the main plant of the Whiting Paper Company at Holoche, Mass. When completed the addition which will add another story to the mill, will afford a large increase in floor space, for which the company is in need because of its increasing business.

* * *

The new paper machine is being installed by the Hawthorne Paper Company at Kalamazoo, Mich., will be ready for operation about September 1. The workmen are rushing the various improvements as fast as possible, but the labor shortage is proving a detriment to building operations. Every effort is being made to have the addition finished as soon as possible, but indications are now that the work will take longer than it was hoped a short time ago.

* * *

Heavy improvements of pulpwood from Chatham,

N.B., are expected at Portland, Me., within the next few weeks, and shippers are making every effort to obtain the craft necessary for this traffic.

* * *

A report from Middletown, Ohio says that the Colin-Gardner Paper Company has offered W. O. Barnit, receiver of National Box Board Company \$175,000 for its property. This amount about equals the bonds and the unsecured creditors will not receive anything. It is also reported that Charles W. Shartle, stockholder and creditor, will oppose this sale in order to gain greater publicity with a view of getting a higher price for the property.

* * *

F. C. Clark, chief of the paper laboratory, of the bureau of Standards, has secured an assistant in the person of A. D. Conley, a graduate of the paper course of the University of Maine. In addition to having taken a post graduate course at the university Mr. Conley has also had experience in commercial work. He has just taken up his work at the laboratory.

* * *

A new digester has just been installed in the mill of the Carthage Sulphite Pulp and Paper Company. It has a twenty-five tons capacity, is forty-two feet high and fifteen feet in diameter. Other additions and improvements include blow tube 20 x 24 feet, and tank 20 x 20 feet for the storage of strong acids.

THE MISTLETOE A FOREST PEST.

A recent study, conducted by the U. S. Department of Agriculture, of the injury done by mistletoe to coniferous trees in the Northwest indicates that in many regions this is a serious forest problem. The western larch, the western yellow pine, the lodgepole and the Douglas fir suffer the most. Each of these is attacked by a particular species of mistletoe which gradually reduces the leaf surface of the tree and thus causes a great reduction in growth, both in height and in diameter. Excessive mistletoe infection of the lower branches of the tree may cause the upper portion of the crown to die, giving rise to what is commonly called staghead or spiketop. Severe infection throughout the entire crown often results in the death of the tree. Young seedlings from three to six weeks old may be killed within a comparatively short time after they become infected. Furthermore, trees weakened by mistletoe infection are much more susceptible to attacks from fungi and forest-tree insects.

U. S. GOVERNMENT PAPER BILLS.

More than 30,000,000 pounds of paper, embracing almost every kind in present-day use and costing approximately \$1,250,000 a year, is used in the government printing office, making the United States one of the largest buyers of paper in the world.

PULP AND PAPER NEWS

The United Waste Paper and Metal Co., of Canada, is a new firm which was recently registered.

The forest revenue for the month of July in British Columbia far exceeded that of the same period last year and that of May was a record, twenty million feet of lumber being sealed in the province.

C. Nelson Gain, superintendent of the Don Valley Mills, Toronto, has been spending his holidays at Big Bay Point, Lake Simcoe.

F. L. Ratcliff, of the Ratcliff Paper Co., Toronto, took part in the recent international lawn bowling tournament at Buffalo playing with the Granites. The rink skipped by C. O. Knowles, manager of Canadian Press, Limited, of which Mr. Ratcliff, is a member, won the final match in their group of the Toronto and District Lawn Bowling Association, last week.

George E. Challes, western sales manager of the Riordon Pulp and Paper Co., and wife, have returned to Toronto after a pleasant trip down the St. Lawrence river as far as Saguenay.

A charter has been granted to the Feldspar and Clay Products, Limited, with a capital stock of one million, five hundred thousand dollars and head offices in Warton, Ont.

While working the plant of the New Toronto Paper Company, William Armstrong had his head caught in one of the wheels of a machine and his skull was badly fractured. An unusual operation was performed at the Western Hospital when a small silver plate was inserted in his head. It is believed that his life will be saved by this means.

The Lambton Flax Company will establish a flax mill at Petrolea, Ont., the town having passed a bonus by-law to grant the industry a site of twenty-five acres and other minor concessions.

A charter has been granted to the Pine Lake Lumber Co., Limited, with a capital stock of sixty thousand dollars and head offices at Pickard Landing, in the district of Nipissing, to carry on in all its branches a timber, lumber and pulpwood business and to purchase and lease timber lands, water powers, etc.

The marriage took place recently at Saltwood Church, Kent, England, of Miss Gladys W. Huestis, daughter of Archibald M. Huestis, paper mills representative, Toronto, to Captain Ashworth Fellowes of the 83rd Battalion, C.E.F., son of Mrs. Rockcliffe Fellowes, of Ottawa.

E. P. Foley, of the Foley-Rieger Pulp and Paper Co., Thorold, Ont., who operate three pulp mills in that town, reports that his company are very active. They are now turning out about fifteen tons of mechanically ground wood pulp a day. William Wilson is superintendent of the Peerless plant and Joseph Foley, son of E. P. Foley, is superintendent of the Foley-Rieger and Davy mills which are located close to each other and a connection has been built between the two. Water conditions are good but at present there is a shortage in pulp wood.

The 228th Battalion has closed its fifth week of recruiting in Toronto with the high average of forty men per week. Considering the state of the man market, Lieut. H. S. Price, commanding the Toronto unit, is gratified at the showing and has opened a depot in Hamilton. It is probable that the Battalion will leave the second week in September for overseas. Many Russian and kindred foreign population have enlisted and will prove excellent material for this purely working battalion.

During the recent forest fires in Northern Ontario, the camp of the Mattagami Pulp and Paper Co. at Smooth Falls, Ont. narrowly escaped destruction. The reciprocating pumps were all brought into action and after a hard fight, the buildings and supplies were saved. The flames were beat off the foremen's houses which caught fire many times. There has been a delay in the arrival of the rails for the three mile spur line, but the steel is now all on hand and it is expected that track laying will be completed within ten days. This will enable the company to get in sufficient supplies of cement which, until the present, had to be taken down the Mattagami river in scows. The structural steel is all on the ground, fabricated and ready for erection and the footings for the mill and power house will be completed within a couple of weeks. It is hoped to have the new sulphite mill closed in by the early fall. Between five and six hundred men are employed in excavation work and building the coffer dam, and the draughting department has been removed from Toronto to Smooth Rock Falls.

"Khaki Life" is the name of a paper published at Camp Borden every week and printed in Barrie. It is a paper written by soldiers for soldiers and has a unifying influence on the camp. Capt. Tom Flanagan, paymaster of the 180th Sportsmen's Battalion, is the manager. Among the contributors are such well known newspaper men as Capt. Lou Marsh, Capt. Fitzgerald, Capt. Hughes and Lieut. Munro.

The eyes of the world are upon Canada as a great pulp and paper country and many Canadian capitalists are receiving letters from construction and hydraulic engineers in reference to the erection of new plants while mill equipment firms are canvassing industriously for orders. One leading English concern writes to the effect that the present situation in regard to the importation of pulp has aroused British importers, as well as paper manufacturers, to the necessity of drawing their supply of pulp as far as possible from Canada to which country the United Kingdom will naturally look for the bulk of her requirements while the greater portion of mechanical pulp has always come from the Dominion, the supply of chemical pulp has been limited. The amount of the latter used in Great Britain is tremendous, and it is obvious that a great number of very large mills can be built in Canada before there is any danger of overcrowding the market.

The Monteith Pulp and Timber Co., who have a rossing plant and saw mill at Monteith, Ont., and a saw mill on the Frederickhouse river lost half a million feet of lumber at the latter mill during the recent forest fires in Northern Ontario. At Monteith they had several hundred cords of pulp wood eaten up by the flames. The blaze came within thirty feet of destroying two thousand more cords near the mill. Their rossing plant is now turning out two hundred cords of pulp wood a day running the full twenty four hours. The company could extend operations if they did not find it so exceedingly difficult to secure labor.

M. J. O'Brien, of Renfrew, who is interested in many pulp propositions, intends proceeding with his development scheme at Calabogie where five thousand horse power will be developed. There will be a transmission line between that point and Renfrew.

SAVING DAMAGE TO THE FOREST.

The system of forest fire prevention in use in Vermont has now been given sufficient trial to demonstrate its efficiency, and the results are most encouraging. Not only has a smaller percentage of Vermont's forest area been burned over during the past few years than in adjoining States, but the expense of fire fighting has been relatively less.

The law provides that the expense of fighting forest fires is borne by the town in which it occurs, but if in any one year this expense exceeds 5 per cent of the grand list the balance is paid by the State. In the unorganized towns the State bears the whole expense, since the taxes come to the State. In the year 1908, before the establishment of the Forestry Department, the State of Vermont spent \$9,039.32 in this way. During the seven years since the establishment of the department the total cost for this work has been \$5,565.15, or an average of \$795 a year.

WOULD THE ONTARIO SETTLER OBJECT?

Would the Ontario settler object to a system of 'permits' issued by forest rangers for the burning of his clearing slash? Settlers in Quebec and British Columbia are contentedly co-operating with the provincial forest administrations under the permit system, with the result of enormous savings in timber and greater safety to the farming communities.

Would the Ontario settler object?

Read what the Ontario Department of Lands and Forests says on page XI of the 1915 report:

"In the Port Arthur district there were several fires caused by settlers clearing land. About 200 acres of small timber was damaged, 13 settlers losing their effects as a result of these fires."

Would the Ontario settler object?

RESTORING THE SLATE.

Slates may be brought back into schools in the United States on account of the shortage of paper.

Cheap paper writing tablets now used in schools may disappear, or what is more likely, become prohibitive in price. Common five-cent tablets now contain little more than one-half the sheets they did before the beginning of the war, and paper firms say they are being furnished at an effort.

TO DECREASE SIZE OF PAPERS.

Publishers of daily newspapers in Greater New York at a meeting held a few days ago, took action which will result in a decrease of the number of pages in their morning, evening and Sunday issues of 121 pages a week. The reduction of so many pages is a step to relieve the news-print paper situation, which is regarded by the publishers as very serious. Action was also taken to eliminate returns of unsold copies.

Little hope of obtaining cheaper paper through the use of cotton stalks as raw material is held out by W. A. Taylor, chief of the bureau of plant industry of the Department of Agriculture, Washington, which has been making tests for three years.

"There is no question," Mr. Taylor said, discussing the reported discovery of a new process at Berlin, "that good paper can be made from cotton stalks, but the cost of assembling cotton stalks at a given point near a proposed mill, because of the transportation, as well as the difficulty of getting together enormous quantities of the stalks, must be considered. The same applies to corn stalks.

"Very good paper can be made from corn stalks. The labor and transportation cost of bringing the material together in sufficient volume to operate a mill has, heretofore, prevented commercial development.

"We are working hard on the idea of making paper from straw, especially the flax straw of the Northwest. This is assembled in large quantities before the threshing of the seed, and pulp from flax straw is valuable for the heavier papers and boards."

QUEBEC SETTLERS OBEY NEW PERMIT LAWS.

That settlers in forested districts will accept sensible legislation in the spirit in which it was designed has been proved by results in Quebec thus far in 1916. The amendment passed at the last legislature requires a settler to obtain from a ranger a permit to start his clearing fires, such a stipulation blanketing the entire season of fire danger. The Lower Ottawa Forest Protective Association report that to the first of June, 1916, about 350 settlers' slashes have been burned in their territory under permits.

The rangers and inspectors report further that "we are receiving hearty co-operation from the settlers, no prosecutions of offenders having been rendered necessary as yet. The new laws are of much benefit and we encounter little trouble in having them painstakingly applied."

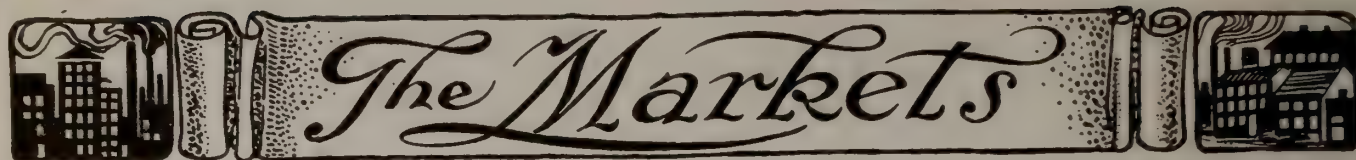
THE PAPER INDUSTRY OF THE U. S.

The United States is now producing 4,500,000 tons of paper per annum, valued at over \$300,000,000. This includes paper of every kind, but does not include imports, of which Canada alone sends 1,100 or 1,200 tons of news-print per day.

Canada is exporting 1100 tons of news print paper per day to the United States.

The International Paper Company makes one-third of the news-print paper produced in the United States.

In Atlanta, Georgia, the price of the afternoon papers has been increased from two to three cents the copy.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The scarcity of news print is becoming alarmning and publishers in several large cities across the border have been meeting to come to a basis of understanding in reference to cutting down the number of pages in their sheets, and reducing waste in the press rooms.

Recently a company of organized buyers representing leading dailies in Ohio and other states invited bids for a year's supply of news print. Not a single mill tendered, all the plants having all the contracts on hand that they could take care of notwithstanding an average increase of 13 per cent in production.

The export of news print from Canada is now averaging twenty million dollars a year and it is expected before many months elapse the figures will reach twenty five millions annually. The latest returns show that, in June last, there was exported \$1,713,822, and for the first three months of the present fiscal year the aggregate reached \$4,624,632 as compared with \$3,657,132 in the first quarter of last year, an increase of nearly a million dollars.

It is believed that the exports of chemical pulp will soon be running around a million dollars a month whereas in 1915, at this period the amount was about half a million. The exports for the last six months are January \$653,103; February \$654,389; March \$847,83; April \$686,124; May \$995,961; June \$802,144. In mechanical pulp the figures are also taking a gain, and in June the exports totalled \$425,727, while the other months of the present calendar reveal January \$565,573; February \$171,589; March \$448,623; April \$248,863; May \$276,784. The future of the industry is shown in the way paper stocks, listed on the stock exchanges, are being bought up and the rapid increase in quotations. The trade returns demonstrate that there is every justification for the augmenting interest taken by investigators in paper stocks.

News print continues to be very stiff in price and in the open market some very high figures have been obtained for spot deliveries of limited quantities. Foreign countries continue to make strong appeals for supplies but in only a few cases can such requisitions be met. All the plants are feeling the scarcity of labor and many new projects are under consideration. It would not surprise those in a position to know to see the output of news print in the Dominion increased fifty per cent within the next twelve months.

Book and writing plants are also rushed to the limit and have withdrawn all quotations. "It is a shame the many good orders that we have to turn down", remarked a leading sales manager this week, "simply owing to our inability to fill them. We would be kept running to capacity for the next four months if we did not take aboard another order."

It is generally felt that prices will go higher in all lines of paper before they will slacken off. The European war is likely to last another year and then after

hostilities are over it will take many months for matters to be readjusted. The mills now in existence will continue to benefit for a considerable period from the prevailing lofty prices. Customers, who do not properly understand the situation and realize what the mills are up against are threatening what they will do some day in the future and tell sales managers that they will be coming on their knees begging for business, but this is not giving the companies any uneasiness. They know that that day is far off and even now declare they have absorbed more of the increase in the added cost of raw materials, wage increase, etc., than they are getting out of the consumer.

Another book and paper manufacturer stated that patrons were now inclined to give larger orders and he thought that this would continue, making manufacturing conditions in Canada more specialized like those across the line. There the runs are large and machines are kept for several days on one weight and grade. It is the frequent changes in the Dominion that have kept down profits and increased the expense of production, resulting in loss of time and labor. Where the runs are for two days and over, or where one machine can be set to work constantly on a certain class of paper, it is easier to produce that kind at from half to three quarters of a cent less per pound and make more money than it is to fill requirements for two, five or ten ton lots. It is the same as in the printing business. It is quantity output of a like kind that counts and cheapens production both to the consumer and the manufacturer.

Some of the paper houses have increased the price of bonds another cent during the past week and while business has fallen off during the warm weather it has kept up remarkably well. Sulphite pulp is still ascending and the shortage is becoming more acute. Some sales have been made as high as one hundred and ten dollars at the mill and prices are going skywards all the time. Foreign stocks are difficult to obtain and Canadian manufacturers have not a great deal to offer, the majority of the supply being contracted far ahead.

In ground wood pulp conditions are improving although this branch of the industry has been the last to feel the uplift in quotations, for the reason that water levels have been high across the border.

All grinders are running to capacity. Ground wood pulp is bound to go higher in the near future as during the last six months there has been an increase in the price of wood pulp of fully twenty-five per cent. Some operators in Quebec are asking ten dollars a cord, half spruce and half balsam, which, with a freight rate of seventeen cents, would make the raw wood, delivered say in Wisconsin, cost about sixteen to seventeen dollars. Peeled wood in northern Ontario is now worth about \$7.50. One leading purchaser stated this week that there was not ten per cent of the pulp wood being cut in Northern Ontario this season that there

was in other years owing to the great labor shortage. The recent fires have wiped out several thousand cords and this did not tend to improve matters. How some of the companies are going to get sufficient men to go into the bush this coming winter is a problem perplexing many heads. The forestry battalions have drained the country dry of axmen and wages were never as high as at the present time.

Tissue and wrapping paper mills are very busy and have so many orders on hand that they are practically ignoring offers for future business. There have been no increases for a month now but advances are expected at any time. During past summer seasons, while mills have been scurrying for business, the great question with the plants now is to keep up with the business in hand. There has been some slight relaxation during the past few weeks in orders but this is welcomed as it will enable producers to catch up to a certain extent. Board mills are all busy and cannot undertake any new deliveries within the next couple of months. Paper box factories are also running to capacity but experience difficulty in getting supplies, while female employes are hard to secure in sufficient numbers.

The rag and paper stock arena is not as active as it was but roofing stocks is in better demand. There have been few changes in prices. Thirds and blues, old white cotton and clean mixed papers are a little higher.

Merchants and others are saving their waste paper and rags to an extent never known before and stocks are plentiful.

One leading Canadian concern intends in the near future to erect a sulphite pulp plant of fifty tons capacity and another is installing an equipment for the production of sulphate pulp while another is putting in a Fourdrinier machine for the making of sheathing paper. Development appears to be the watchword all along the line, while numerous firms are hesitating about installing new machines at present, owing to the stiff conditions and uncertainty prevailing in the iron and steel market, not to speak of the slow deliveries and many broken promises by paper mill equipment builders. All are getting ready for expansion after the war. It has been galling to many concerns to lose hundreds of thousands of dollars by reason of limited capacity but few are prepared to make the heavy monetary outlay for new equipment just now. There is probably not a concern in Canada that could not secure fifty per cent more business than it is doing at present. The shortage of supplies and labor render any large new undertaking rather doubtful with the existent state of affairs.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls) \$2.40 to \$2.50, at mill, in carload lots.
 News (sheets), \$2.25 to \$2.45, at mill, in carload lots.
 Book papers (carload), No. 3, \$6.00.
 Book papers (ton lots), No. 3, 6.00c to 7.00c.
 Book papers (carload), No. 2, 7.50c to 8.00c.
 Book papers (ton lots), No. 2, 7.75c to 8.50c.
 Book papers (carload), No. 1, 8.25c to 9.00c.
 Book papers (ton lots), No. 1, 8.25c to 9.00c.
 Sulphite bonds, 9c up.
 Writings, 7½c up.

Grey Browns, \$3.50 to \$4.50.
 Fibre, \$5.50 to \$6.25.
 Manila No. 1, \$5.50 to \$6.25.
 Manila, B., \$4.25 to \$4.75.
 Unglazed Kraft, \$7.50 to \$9.00.
 Glazed Kraft, \$8.00 to \$9.50.
 Tissues, bleached, 90c to 1.50c.
 Tissues, bleached, 1.00c to 1.50c.
 Tissues, unbleached, 80c to 1.15c.
 Tissues, cap., 60c to 80c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.
 Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 40c.
 Paper bags, kraft, 25 discount.
 Confectionery bags, 20 discount.

Pulp.

Ground woodpulp (at mill) \$18 to \$22.
 Easy Bleaching Sulphite, \$110.00 up.
 Sulphite, news grade, \$90.00 up.
 Sulphite (bleached), delivered, \$150.00 up.
 Sulphate, delivered, \$125.00 up.

Paper Stock.

No. 1 hard shavings, \$3.37½.
 No. 1 soft white shavings, \$2.87½.
 No. 1 mixed shavings, 65c.
 White blanks, \$1.10.
 Heavy ledger stock, \$2.25.
 No. 2 book stock, \$1.00.
 No. 1 book stock, \$1.50.
 No. 1 Manila envelope cuttings, \$1.60.
 No. 1 print Manilas, \$1.00.
 Folded news, 65c.
 Over issues, 65c.
 No. 1 clean mixed paper, 55c.
 Old white cotton, \$4.50.
 Thirds and blue, \$2.65.
 No. 1 white shirt cuttings, \$7.25.
 Black overall cuttings, \$2.75.
 New light flannelettes, \$5.00.
 Ordinary satinets, \$2.05.
 Flock, \$2.15.
 Tailor Rags, \$2.10.

MONTREAL MARKETS.

The market for all lines of paper—news, book, writing, wrapping, etc., continues to exhibit firmness and strength. The same is true of chemical pulp. As a matter of fact, unusual firmness characterizes the demand for all kinds of sulphite. This demand is both from foreign and domestic sources and consumers are faced with the fact that there are insufficient stocks to meet their demand. The situation has been further aggravated by the refusal of Sweden to permit the export of chemical pulp to the United States unless guarantees are given that dealers in the neighboring Republic would not re-ship it back to England. As a result of this prohibition, England has to look to Canada very largely for her sulphite. Apparently there is no relief in sight in regard to easier market conditions or a more abundant supply. On the other hand, the tendency is steadily upward. Easy bleached sulphite is quoted at from 105 to 105½, and even as high as 105¾, although no sales have been made at the latter figure.

News in rolls is quoted at \$2.25 and \$2.40 at the mill in carload lots, either for the Toronto or Montreal market, while sheets in carload lots are quoted at from \$2.40 to \$2.50 at the mill. Ground wood pulp and unbleached sulphite are in brisk demand and prices undoubtedly will show an advance owing to the unprecedented call. Buyers who have been holding off hoping for a decline in the market have been disappointed up to the present time and are likely to be further disappointed, as there is nothing to indicate a decline. On the other hand, everything points to extreme firmness, both in ground wood pulp and sulphite pulp.

Quotations, f.o.b. Montreal, are as follows:—

Book—News—Writing and Posters.

Roll News, \$2.40 to \$2.50 per ton for large orders; \$3.00 to \$3.50 for small orders.

Ream News \$2.50 at mill per ton for large orders; \$3.50 to \$3.75 per ton for small orders.

No. 1 Book, 7.50 to 8.25.

No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.

No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.

Writings, 6.95 to 10.

Writing Manila, 6.95.

Cover papers, 11 to 14½¢, according to colors wanted.

Colored Poster, 6½ to 7½¢.

An extra charge of 10¢ per 100 lbs. will be made when Book Papers are packed in frames, and 15¢ per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs. . .	3.40	3.65	3.90

NEW YORK MARKETS.

New York, N.Y., August 12, 1916.

While the ground wood pulp market continues acute, conditions have been prevented from growing much worse, by the spell of rainy weather which we have been experiencing. If the season had been a dry one, many of the pulp manufacturers would have been compelled to allow their machines to remain idle, because of low water, which generally prevails during a dry summer. However, despite the great amount of rain and the fact that most of the grinders are able to run their plants at maximum capacity, the supply is far from being sufficient to take care of the demand. And as a consequence prices have maintained their high levels. Some mills are quoting as high as \$22.50 per ton, f.o.b. mill. Prospects are that, if anything, the market will continue to strengthen and that higher quotations will soon prevail. This is based on the fact

that many pulp producers have contracted ahead for their output, while the others find an abnormally great demand for whatever is available. With the news-print mills operating to the very best of advantage, and with the general consumption of ground wood increased, because of the scarcity of sulphite, nothing but a miracle can change the course of the market.

In sulphites, there has been no material change. The market is in a very acute condition, because of the difficulty in getting stocks and, according to the opinions of some of the best posted men in the trade, these difficulties will become considerably aggravated as time goes in. Present advices from Scandinavia are to the effect that there are no possibilities that the exports of chemical pulp to the United States will increase, within the near future. The fact is that there are many chances that the Swedes may decide to sell their pulp on the European continent, where it will bring a higher price. So acute has the situation become that during the past few weeks, a resolution was adopted in the Senate of the United States Congress, scheduling an investigation of the pulp market, to determine why matters could not be readjusted.

At the present time, it would be safe to say that there was no foreign bleached sulphite available. The quotations which are named, viz., \$175 to \$190 per ton, ex-dock, New York, are merely nominal. Domestic bleached is quoted at \$135 to \$140. Foreign unbleached is firm, because of the conditions mentioned, and is quoted at \$90 to \$100, ex-dock, New York, sales having been reported for as high as \$110. Makers of domestic strong sulphite have very little to offer and ask at least \$80 per ton. Easy bleaching can not be had for less than \$120 per ton. Kraft is perhaps suffering more than any of the other chemical pulps, spot sales, in small lots having been reported at \$115.

Dealers are somewhat disappointed with the way the rag market has been acting within the past few weeks. While there has been a certain amount of activity, it has been far from meeting expectations. However, no hope seems to be lost, for the dealers still reckon that the continued operation at capacity of the writing mills must of itself cause a demand for rags within a comparatively short time. New white shirt cuttings are quoted at 9¢ to 9½¢; washables, at 6¢ to 6½¢; new blue cottons, at 4¼¢; old whites, No. 1, at 6½¢; house soiled whites, at 4½¢; street soiled whites, at 3½¢ to 4¢; thirds and blues, at 3¾¢ to 4¢; black stockings, at 3¾¢ to 4¢. Roofing stock has been holding around 2¼¢.

Bagging and manila rope have not shown any undue activity. The fact is that, when the scarcity is considered, prices have hardly been affected. Bright bagging is quoted at about 3½¢, with sound bagging at 3¢. A little stock has come over from England, but it has been of an inconsequential character. Manila rope is quoted at about 4½¢ to 5¢.

Waste papers have been showing to fairly good advantage. Hard white shavings have been moving at about 4.15¢, with soft white at about 3.60¢. There has been little change in magazines, which are holding at about 1¼¢. Old krafts are in good demand, ranging between 2¾¢ and 3¢. Mixed papers are selling as high as 65¢.

The paper market remains as firm as ever. It is true that a number of jobbers report a diminution in demand, but this has made practically no differ-

ence with the mills. They maintain that the volume of business available is tremendous. In most cases, it is still difficult to place an order. What will ultimately take place in news-print, seems to be a mystery—but no one would be surprised at the worst. At a meeting of New York newspapers last week, the publishers agreed that they would have to reduce the size of their Sunday supplements, and, in some cases, abolish them. The investigation now being conducted by the Federal Trade Commission has revealed the fact that the situation is worse than was suspected. There are actually a number of newspapers throughout the country which are in danger of being forced out of business.

The tissue market is very firm, with few manufacturers in a position to take on business. Good bleached tissue cannot be had for less than \$1.00 a ream. Wrappings are all firm. All of the manufacturers in this class are operating their machines to capacity. The same is also true of book and boards. News board to-day quoted at \$60 per ton; \$50 per straw board; \$52.50 for chip board.

The following quotations are purely nominal:—

Pulps.

Ground Wood, No. 1, \$21 to \$22.50 at pulp mill.
Ground Wood, No. 2, \$19 at pulp mill.
Unbleached Sulphite, dom., 3.75c at pulp mill.
Easy bleaching, impt., 4½c to 5c.
Unbleached foreign, 4c to 4.25c, ex-dock, N.Y.
Kraft, 4.50c to 5.00c, ex-dock, N.Y.
Bleached, domestic, 6.25c, at pulp mill.
Bleached, foreign, 8c to 13c, ex-dock, N.Y.

Paper.

News (rolls), \$4.00 up, at mill, in carload lots.
News (sheets), \$4.25 up, at mill, in carload lots.
Book papers (carload), No. 3, 6c.
Book papers (ton lots), No. 3, 6¾c.
Book papers (carload), No. 2, 7c.
Book papers (ton lots), No. 2, 7¼c up.
Book papers (carload), No. 1, 7¾c up.
Book papers (ton lots), No. 1, 8c up.
Sulphite bonds, 8c up.
Writings, 7c up.
Grey Browns, \$2.85 to \$3.50.
Fibre, \$4.50 to \$5.50.
Manila No. 1, 5c up.
Manila, No. 2, 4c up.
Manila, B., \$3.35 to \$4.00.
Unglazed Kraft, \$7.50 to \$10.00.
Glazed Kraft, \$9.00 to \$12.00.
Tissues, bleached, 90c to 1.50c.
Tissues, unbleached, 80c to 1.00c.
Tissues, unbleached, 65c to 1.00c.
Natural greaseproof, 10c to 14c.
Bleached greaseproof, 15c to 20c.
Drug papers, whites and tints, 7c to 9c.
Paper bags, Manila, 50, 10 discount.
Paper bags, kraft, 40 discount.
Confectionery bags, 33 1-3 discount.

BERTHIERVILLE NURSERIES.

Under the direction of Mr. G. C. Piche, Chief Forester of Quebec, 400,000 trees have been shipped this year from the Quebec government nurseries at Berthierville. Of this number 250,000 were sold to the Laurentide Company, Limited, at Grand' Mere, 20,000 to the Riordon Pulp and Paper Co., 50,000 to the Perthuis Seignory (for the sixth year in succession) and the rest to colleges and private individuals.

SILK FROM SAWDUST.

Making artificial silk from sawdust and other lumber waste is the latest experiment of the United States Forest Products Laboratory at Madison, Wis. The use of artificial silk made directly from wood is increasing by leaps and bounds. Originally its principal use was in the manufacture of braids and trimmings, but recently the manufacture of hose from artificial silk has become an industry of importance. Other uses for artificial silk are woven goods of all kinds, linings, tapestries, etc., neckties, ribbons, sweater coats, etc. About five and one-half million pounds of artificial silk are used annually in the United States.

Owing to advance in cost of paper, ink, leather and glue, due to war, price of Bibles has nearly doubled during last year. A Bible publishing concern announces that it expects to pay out an extra \$130,000 this year for white paper, while cost of other necessary materials will be \$20,000 greater than usual.

MACHINE TENDER AND BACK TENDER WANT.

ED for a four cylinder 124 inch machine manufacturing chip and test boards. Hinde & Dauch Paper Co., of Canada, Ltd., 43 Hanna Ave., Toronto, Ont.

FOR SALE.—One 80-in. Harper Fourdrinier machine with twenty-five dryers. This machine is a modern, up-to-date, fast running machine, complete in every respect; three 100 ton hydraulic presses with platens 28 x 60-in. Kneeland Company, Inc., Rochester, N. Y.

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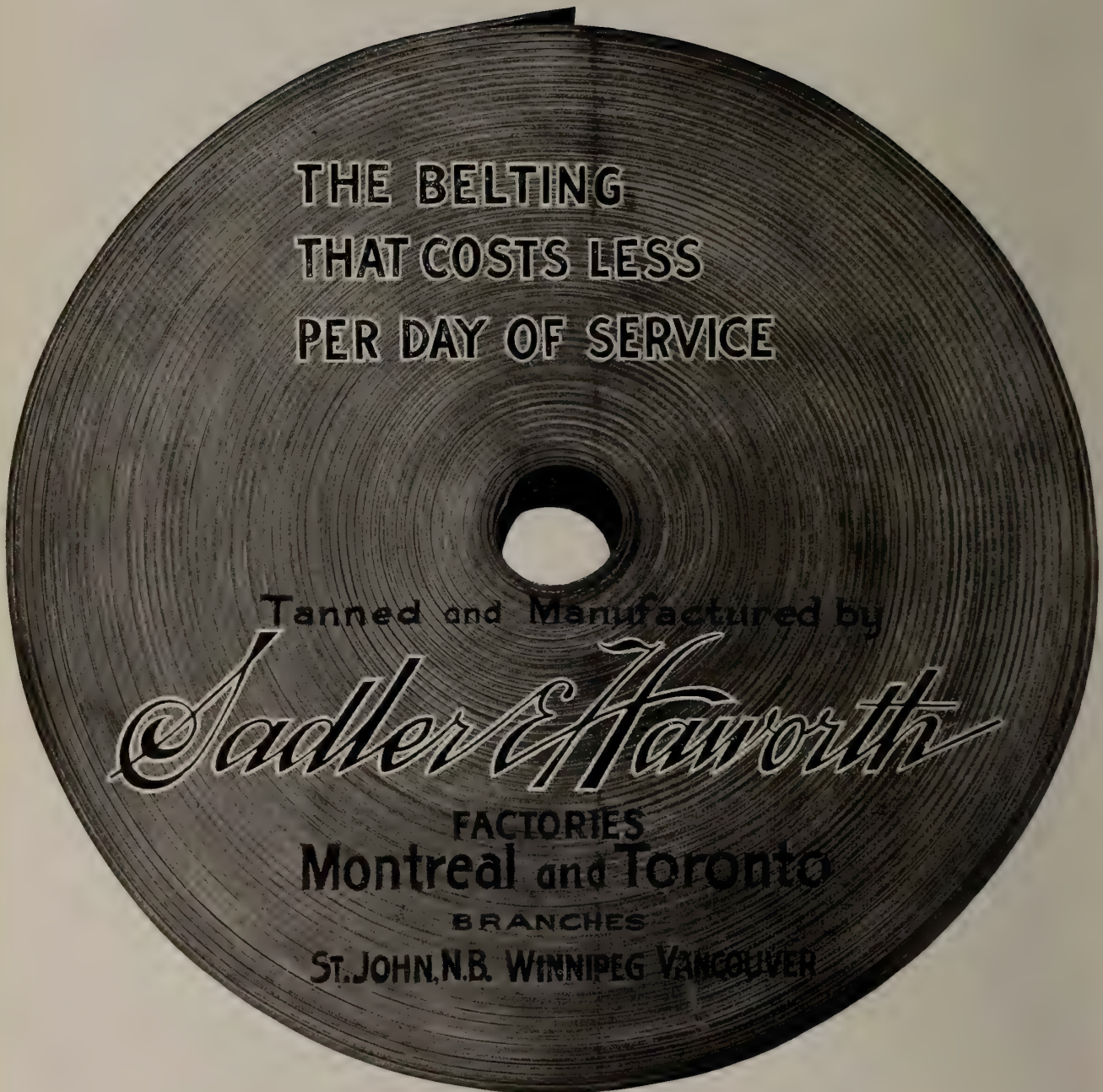
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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Fraser, W., Montreal
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Sadler & Haworth, Montreal.

Belt Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Cars, Dump and Flat

Fraser, W., Montreal
Seasenwein Bros., Montreal

Castings:

Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Columbus, Ohio.

Chain Conveyors:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chimneys:

Canadian Kellogg Co. Ltd., New York.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Condensers—Barometric:

Canadian Kellogg Co. Ltd., New York.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada

Diffusers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digesters:

Canadian Kellogg Co. Ltd., New York.

Digester Lining:

Advance Engineering Co., Ltd., Toronto, Ont.
Panzi Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Ont.

MILL SUPPLIES---Continued

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.
 Penmans, Ltd., St. Hyacinthe, Canada.
 Porritt, Joseph & Sons, Manchester, England.
 Spencer, J. H. & Sons, Bury, England.
 Tippet, Arthur P. & Co., Montreal, Canada.

Filters:

Darling Bros., Montreal, P. Q.
 Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Fricion Holsts:

Glens Falls Machine Works, Glens Falls, N.Y.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
 Northern Crane Works, Limited, Walkerville, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
 Process Engineers, Ltd., Montreal, Canada.

Knives:

Crookes, Roberts & Co., Sheffield, Eng
 Disston, H. & Sons, Ltd., Toronto, Ont.
 Galt Knife Co., Ltd., Galt, Ont.
 Hay, Peter, Knife Co., Galt, Ont.
 Tippet, A. P. & Co., Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotives:

Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built

Sessenwein Bros., Montreal
 Fraser, W., Montreal

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
 Beloit Iron Works, Beloit, Wis.
 Bertram, James & Son, Ltd., Edinburgh, Scotland.
 Bertrams, Ltd., Edinburgh, Scotland.
 Black-Clawson Co., Hamilton, Ohio.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada
 Carthage Machine Co., Carthage, N.Y.
 Downingtown Mfg. Co., East Downingtown, Pa.
 Emerson Mfg. Co., Lawrence, Mass.
 Farrel Foundry & Machine Co., Ansonia, Conn.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Johnson, C. H. & Sons, Ltd., Montreal, Canada.
 Marx, J. & Co., London, E.C., England.
 Moore & White Co., Philadelphia, Pa.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Norwood Engineering Co., Cowansville, P.Q.
 Process Engineers, Ltd., Montreal, P. Q.
 Rice, Barton & Fales, Worcester, Mass.
 Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
 Scott, Ernest & Co., Fall River, Mass.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
 Smith, S. Morgan Co., York, Pa.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
 Ticonderoga Machine Works, Ticonderoga, N.Y.
 Voith, J. M., New York, N.Y.
 Walmsley, Chas. & Co., Bury, England.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. Elias Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Piping—High Pressure:

Canadian Kellogg Co. Ltd., New York.

Piping—Hydraulic:

Canadian Kellogg Co. Ltd., New York.

Piping—Power Plant:

Canadian Kellogg Co. Ltd., New York.

Piping—Welded:

Canadian Kellogg Co. Ltd., New York

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Can. Boomer & Boschert Press Co., Montreal, Canada

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
 Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
 Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Darling Bros., Montreal, P. Q.
 Glens Falls Machine Works, Glens Falls, N.Y.
 Lawrence Machine Co., Lawrence, Mass.
 Lawrence Pump & Engine Co., Lawrence, Mass.
 Smart-Turner Machine Co., Hamilton, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Voith, J. M., New York, N.Y.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Radial Brick:

Canadian Kellogg Co. Ltd., New York.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Fraser, W., Montreal.
 Gartshore, J. J., Toronto
 Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Marx, J. & Co., London, E.C., England.
 Process Engineers, Ltd., Montreal, Canada.
 Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Reinforced Concrete:

Canadian Kellogg Co. Ltd., New York.

Rope, Cotton and Manila:

Jones and Glasco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
 Process Engineers, Ltd., Montreal, Canada.
 Vera Chemical Co., North Milwaukee, Wis.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Canadian Pulp Mill Machinery Co., Montreal, Canada.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
 The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Glens Falls Machine Works, Glens Falls, N.Y.
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Johnson, Chas., St. Henry, Que.
 Marx & Co., J., London, England.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
 Tippet, Arthur P. & Co., Montreal, Canada.
 Voith, J. M., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Westbye, P. P., Peterboro, Canada.

Shredders:

The Jeffrey Mfg. Co., Columbus, Ohio.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
 Cameron Machine Co., Brooklyn, N.Y.
 Moore & White Co., Philadelphia, Pa.
 Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Columbus, Ohio.
 The Waterous Engine Works Co., Limited, Brantford, Ont.

Stacks:

Canadian Kellogg Co. Ltd., New York.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

The Smart-Turner Machine Co., Hamilton, Ont.

MILL SUPPLIES---Continued

- Press Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada
- Strainers—Water:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Straw Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Straw Dusters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Strawboard Making Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
- Structural Steel Works:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Stuff Chests:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Suction Couch:**
Process Engineers, Ltd., Montreal, Canada.
- Sulphite Mill Equipment:**
Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Sulphate Mill Equipment:**
Carthage Machine Co., Carthage, N.Y.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Sulphur:**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners:**
Advance Engineering Co. Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
- Superheaters—Steam:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Tanks:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Tanks—Welded:**
Canadian Kellogg Co. Ltd., New York.
- Transmission Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jones & Glassco, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Transmission Rope:**
Jones & Glassco, Co., Montreal, P. Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Travelling Cranes:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.
- Trolleys:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Tube Cleaners:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Turbines:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurtemberg, Germany.
- Water Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smith, S. Morgan Co., York, Pa.
- Wire Cloth for Paper Machines:**
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Canada.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Waste:**
Hough, R., London, England.
- Wet Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Booth, J. R., Ottawa, Ont.
Bronson Co., Ltd., Ottawa, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Chicoutimi Pulp Co., Chicoutimi, Que.
Davy, James, Thorold, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
MacLaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Pulp Co., Campbellford, Ont.
Ontario Paper Company, Thorold, Ont.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Bathurst Lumber Co., Limited, Bathurst, N.B.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merriton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catherines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que. and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catherines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
 Toronto Paper Mfg. Co., Cornwall, Ont.
 Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
 British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
 Eastern Paper Co., Ltd., St. Basile, Que.
 Ford, J. & Co., Portneuf Station, Que.
 Montreal Paper Co., St. Basile, Que.
 Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
 Riordon Pulp and Paper Co., Ltd., Montreal, Que.
 Western Paper Mills, Ltd., Vancouver, B.C.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Ford, R. & Son, Port Neuf, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Strathcona Paper Co., Strathcona, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 McLeod Pulp Co., Ltd., Liverpool, N.S.
 Walker, J. R. & Co., Montreal, Que.

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 Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
 Jonquiere Pulp Co., Jonquiere, Que.
 Macleod Pulp Co., Ltd., Liverpool, N.S.
 Canada Paper Co., Windsor Mills, Que.
 Booth, J. R., Ottawa, Ont.
 Eddy, E. B. Co., Ltd., Hull, Que.
 Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

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 Ford, J. & Co., Port Neuf Station, Que.
 Montreal Paper Co., St. Basile, Que.
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 Georgetown Coating Mills, Ltd., Georgetown, Ont.
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 Don Valley Paper Co., Ltd., Toronto, Ont.
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 Provincial Paper Mills Co., Ltd., Toronto, Ont.
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 Provincial Paper Mills Co., Ltd., Toronto, Ont.
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 Eastern Paper Co., Ltd., St. Basile, Que.
 McArthur, A. & Co., Montreal, Que.
 Ford, J. & Co., Port Neuf, Que.
 Ford, R. & Son, Port Neuf Station, Que.
 Montreal Paper Co., St. Basile, Que.
 Northumberland Paper & Electric Co., Ltd., Campbellford.
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 Dominion Paper Co., Montreal, Que.
 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 Riordon Pulp and Paper Co., Merritton, Ont.
 Strathcona Paper Co., Strathcona, Ont.
 Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

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 Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

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Provincial Paper Mills Co., Ltd., Toronto, Ont.

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 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
 McArthur, Alex. & Co., Montreal, Que.
 Riordon Pulp & Paper Co., Ltd., Montreal, Que.

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 Dryden Timber and Power Co., Ltd., Dryden, Ont.
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 Riordon Pulp and Paper Co., Ltd., Montreal, Que.
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 Ontario Paper Co., Thorold, Ont.

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 Ford, Joseph & Co., Port Neuf, Que.
 Ford, Rowland & Son, Port Neuf, Que.
 Montreal Paper Co., St. Basile, Que.
 Walker, J. R. & Co., 35 Common, Montreal, Que.
 Western Paper Mills, Ltd., Vancouver, B.C.

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 Ford, J. & Co., Port Neuf, Que.
 Lazier Paper Mills, Ltd., Belleville, Ont.
 Lincoln Paper Mills Co., Ltd., Merritton, Ont.
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 Northumberland Paper & Electric Co., Campbellford, Ont.
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 Trent Valley Paper Mills, Glenmiller, Ont.

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 Canada Paper Co., Montreal, Que.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Northumberland Paper & Electric Co., Campbellford, Ont.
 McLeod Pulp Co., Liverpool, N.S.
 Western Paper Mills, Ltd., Vancouver, B.C.

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 Canada Paper Co., Ltd., Montreal, and Toronto.
 Dominion Paper Co., Montreal, Que.
 Eddy Co., The E. B., Ltd., Hull, Que.
 Ford, J. & Co., Port Neuf, Que.
 Ford, Rowland, Port Neuf, Que.
 Gore Valley Paper Mills, Dundas, Ont.
 Jonquiere Pulp Co., Ltd., Jonquiere, Que.
 Laurentide Co., Ltd., Grand Mere, Que.
 Canada Paper Co., Montreal and Toronto.
 Wilson, J. C., Ltd., Montreal, Que.
 [See also Kraft].

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Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
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Livingstone, H. E. & Co., 80 George.
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Little, T. B. & Co., 23 Cote.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge Paper Co Ltd.....	61
Beveridge, Jas., Chatham, N. B.....	62
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6
The Bronson Company.....	

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	3
Canadian Fairbanks-Morse Co., Ltd. .	10
Canadian Kellogg Company.....	7
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	
Capital Wire Cloth Mfg. Co., Ltd....	60
Carthage Machine Co.....	61
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	
Christie George, Ltd.....	62
Churchill & Sim.....	
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D

Darling Bros, Ltd.....	13
DeCew, J. A.....	64
Dean & Son.....	49
Disston, H. & Sons, Ltd.....	
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
Ferguson, H. S.....	64
J. Ford & Company.....	
Fraser, W.....	65

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	49
Glens Falls Machine Works.....	
Goldie and McCulloch Co., Limited..	3

Groot, H. de

H

Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	60
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	65
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6

K

Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	8

M

Mackinnon, Holmes & Co.....	
Marx, J. & Co.....	65
Meinke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd....	63
Moore & White Co.....	15

N

Northern Crane Works, Ltd.....	
Norwood Engineering Co. of Can. Ltd	13

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	60

S

Sadler and Haworth.....	50
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jos. W.....	64
Scott, Ernest & Co.....	62
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spencer, J. H. & Sons.....	13
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co....	64

T

Taylor, J. A.....	62
Ticonderoga Machine Works.....	6
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd... .	60
Voith, J. M.....	12

W

Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd... .	8
Westbye, P. P.....	
Wilson-Paterson Co.....	



Barber Paper Mill, Georgetown, Ont.



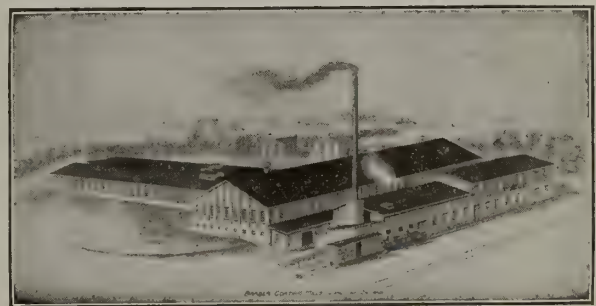
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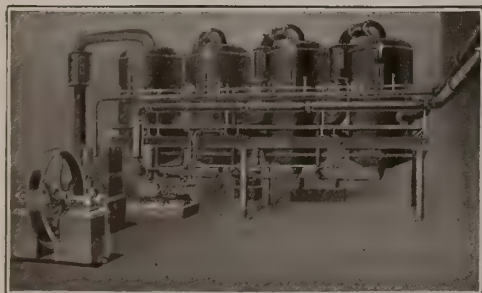
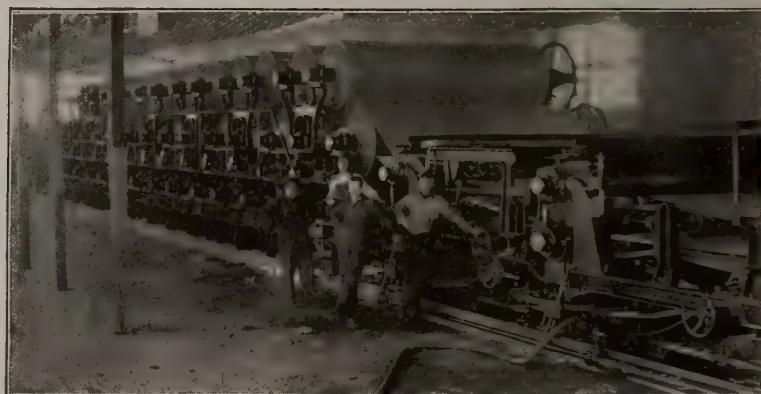
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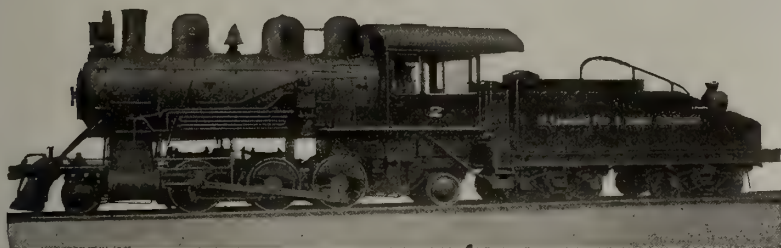
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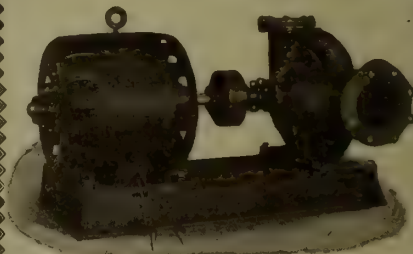


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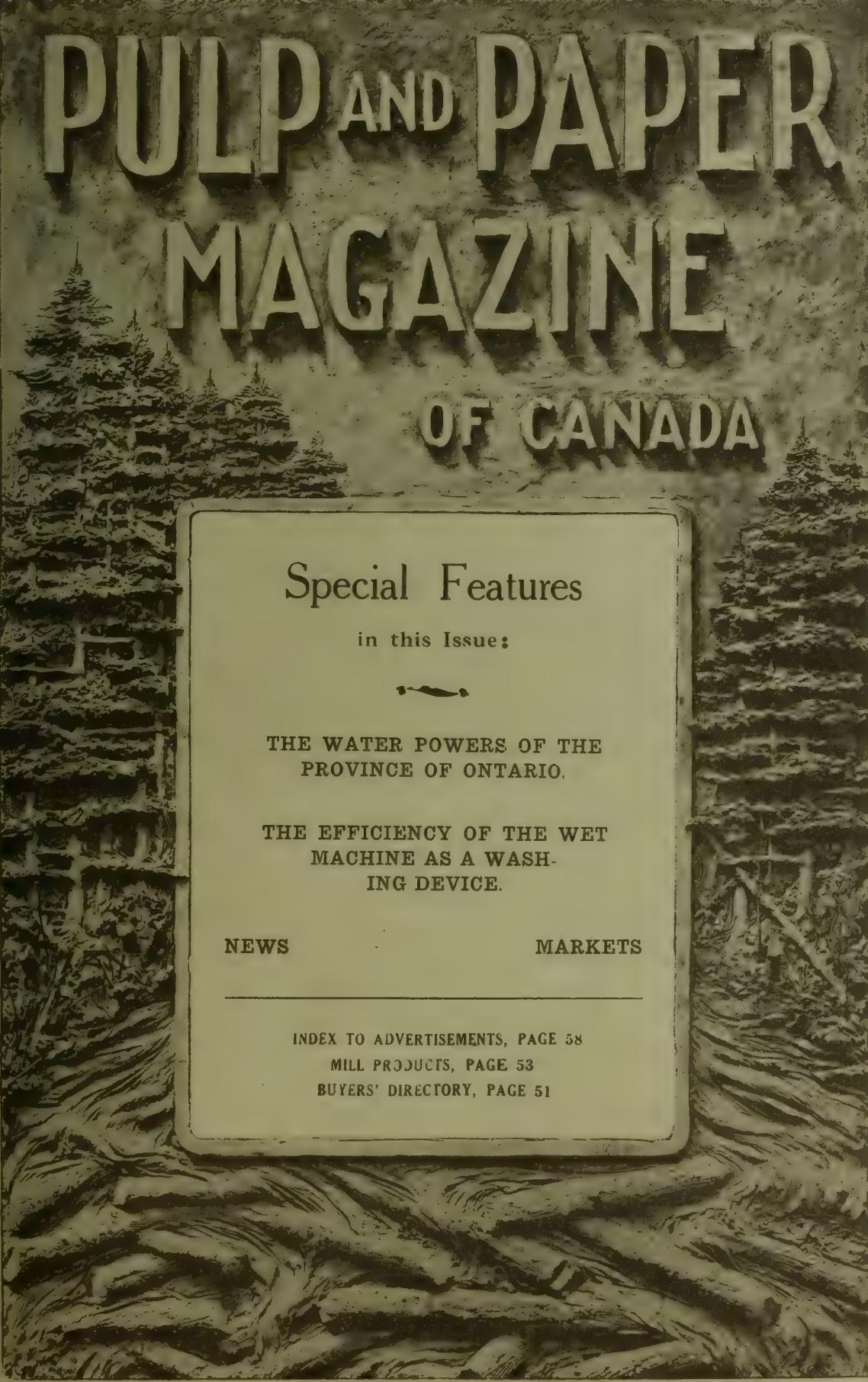


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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

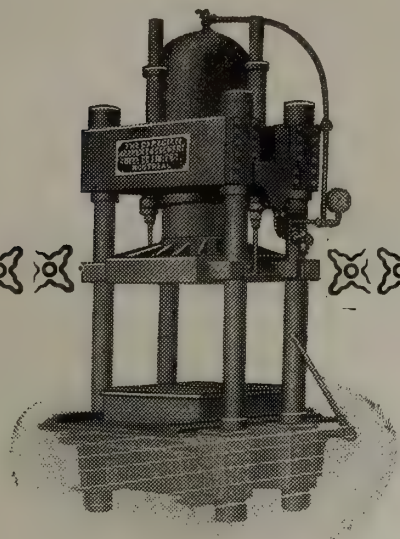
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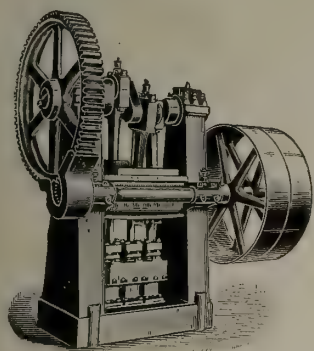
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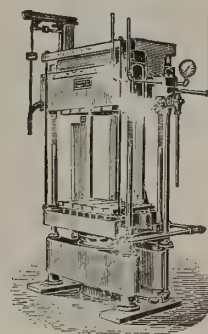


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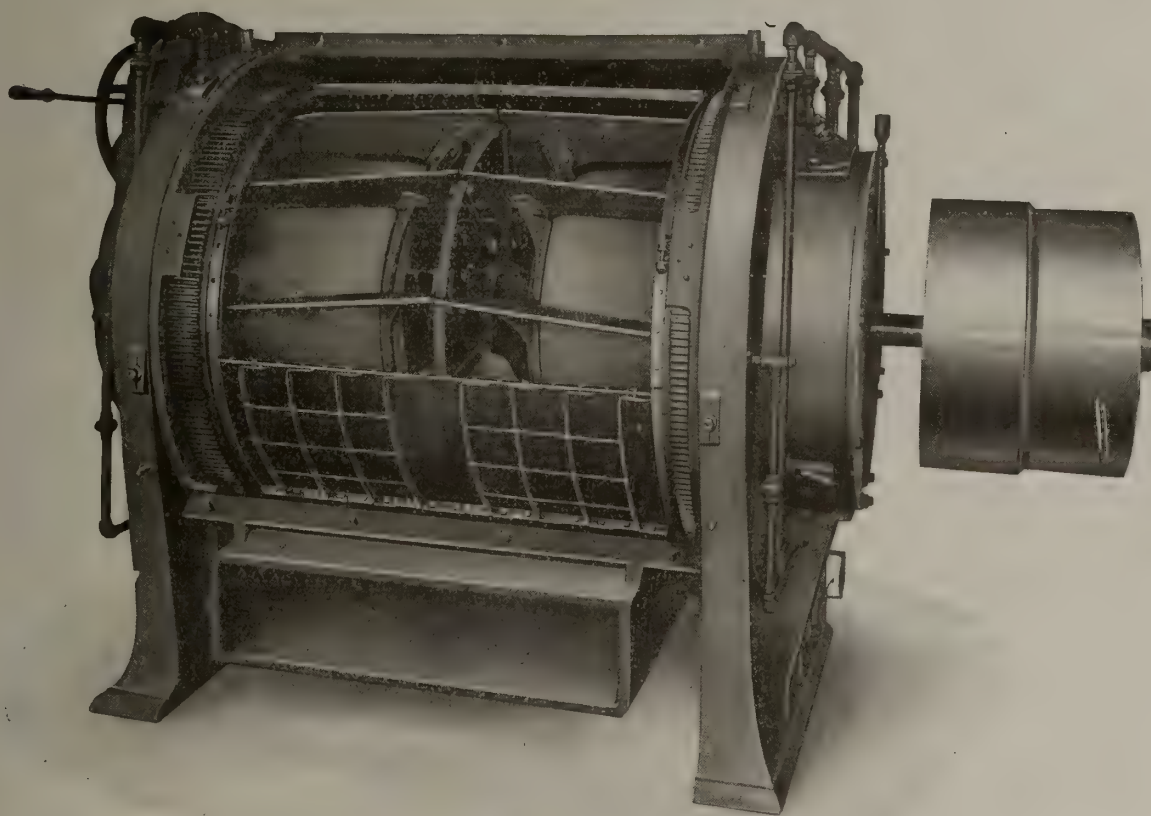
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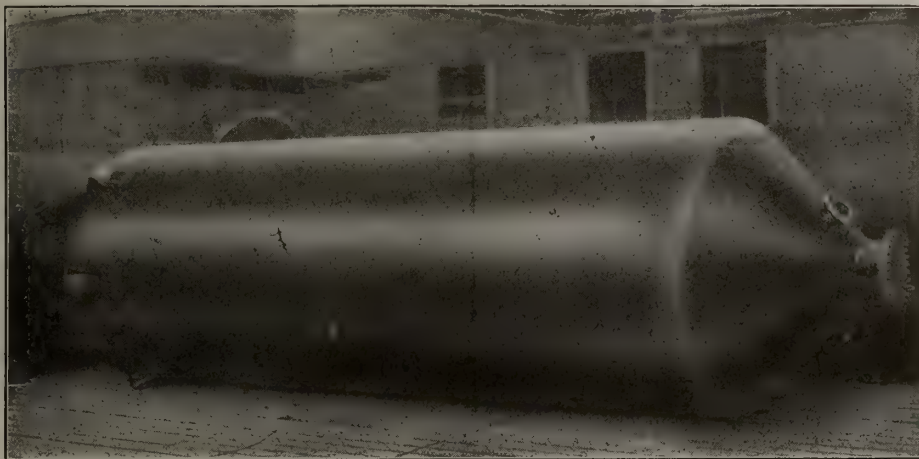
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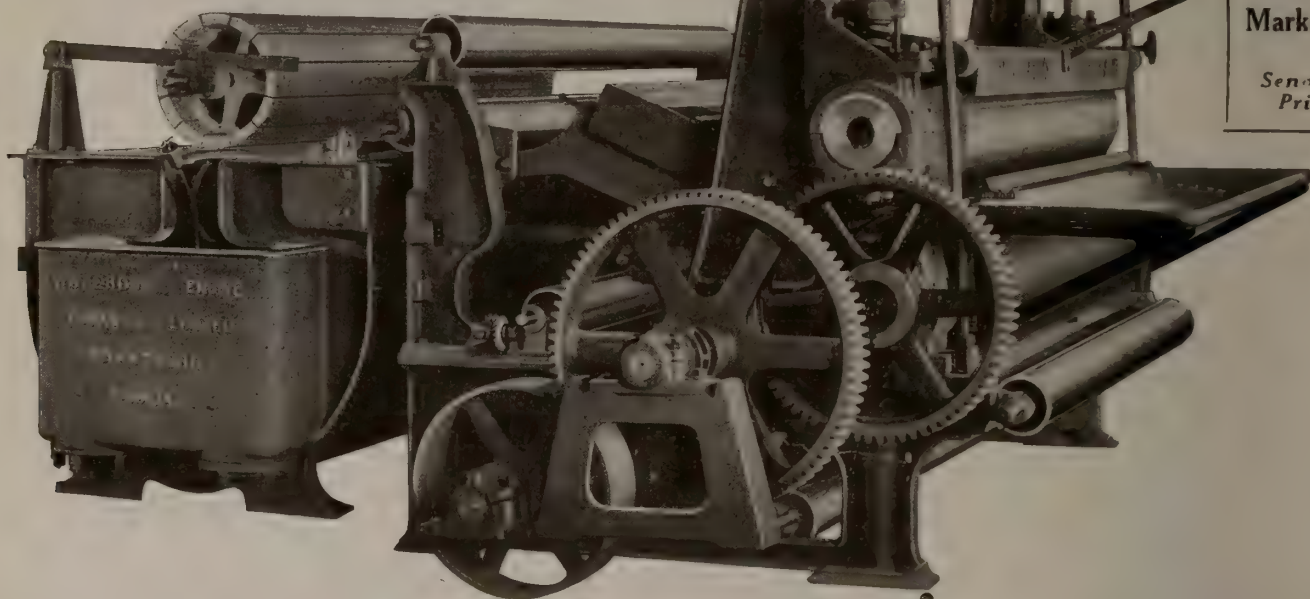
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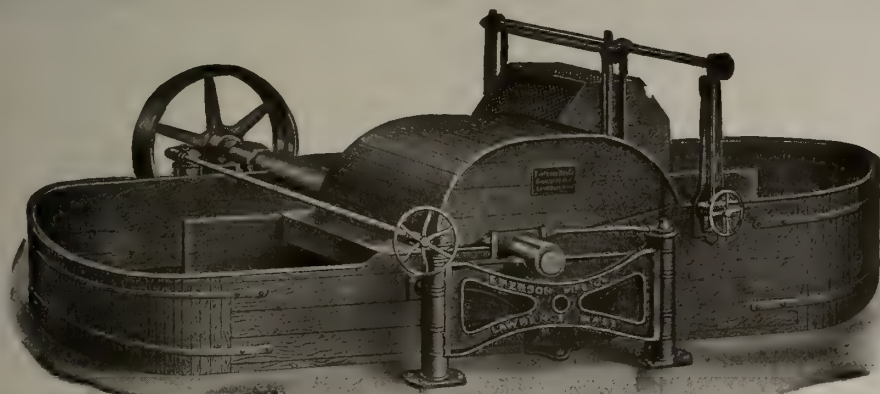
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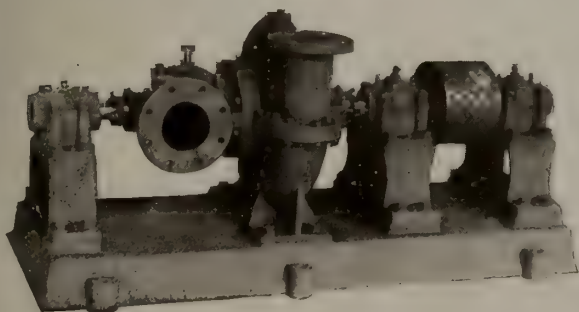
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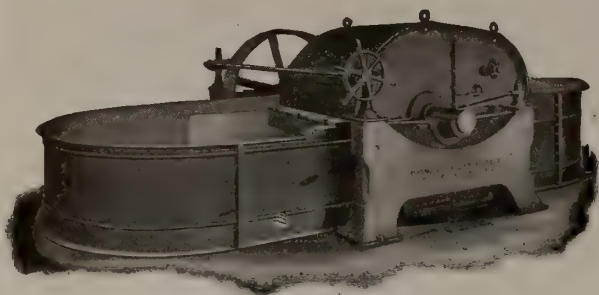
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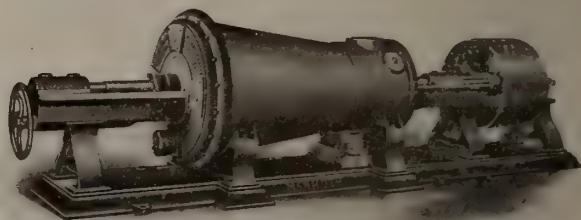
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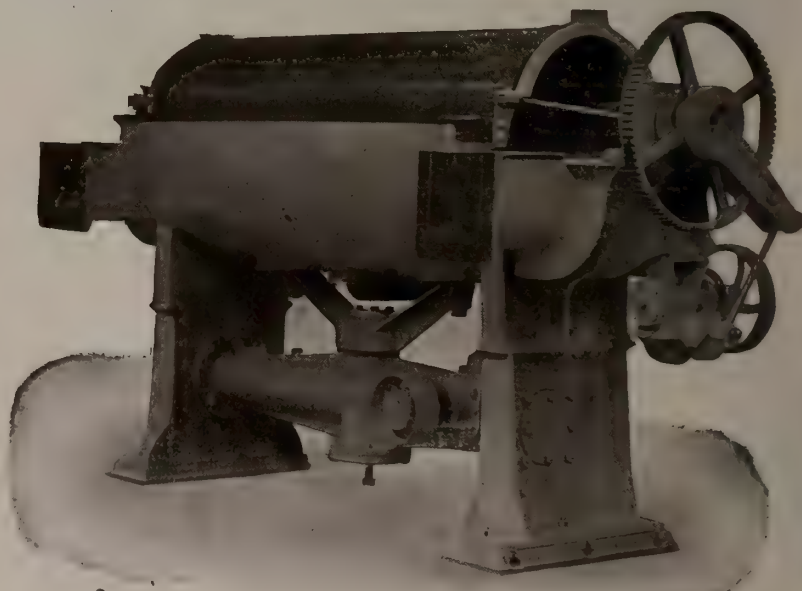
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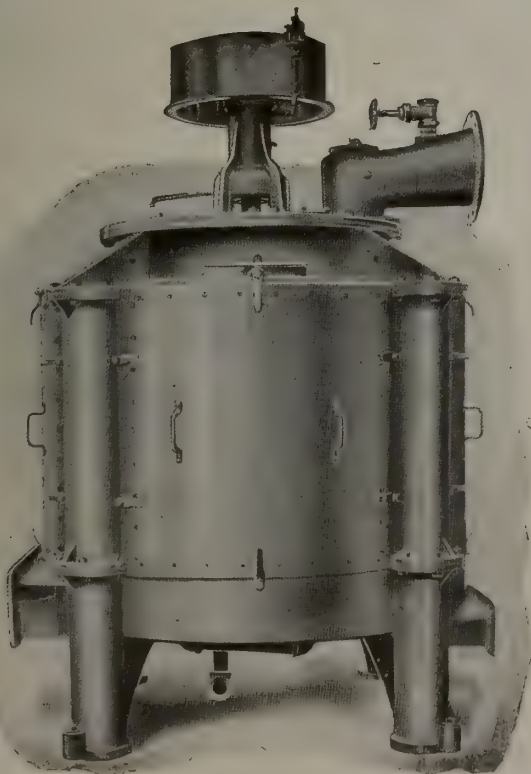
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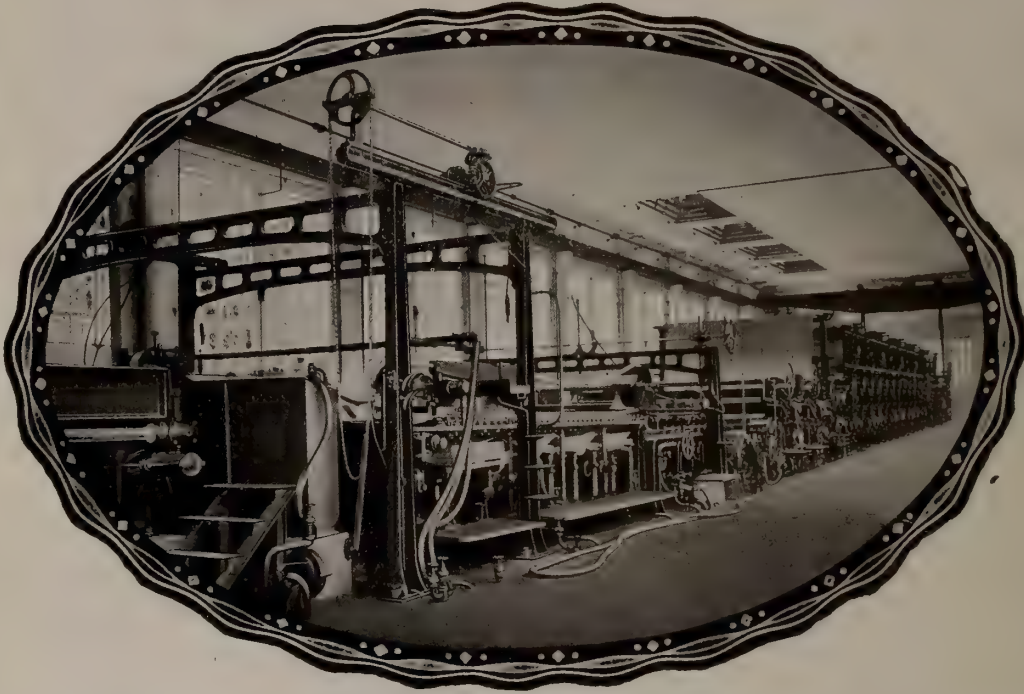
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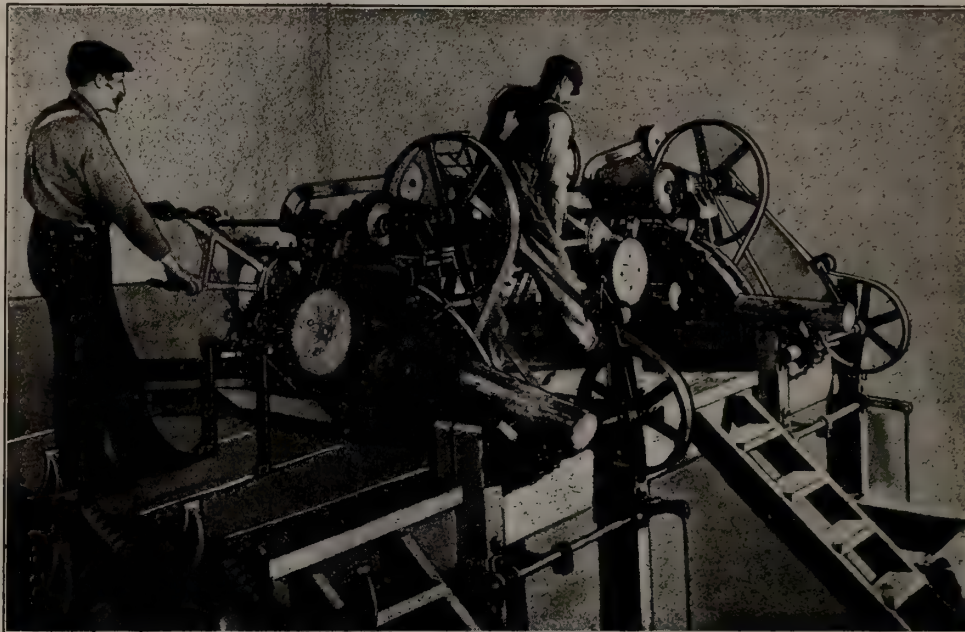
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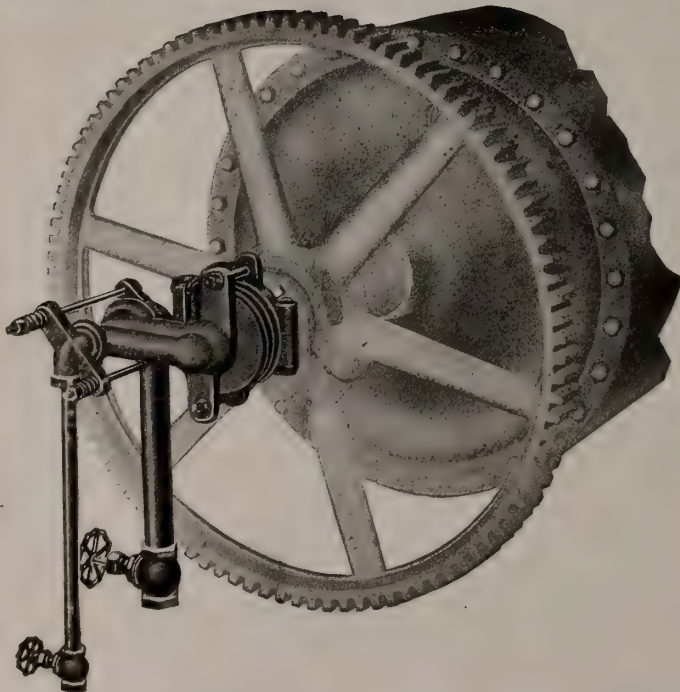
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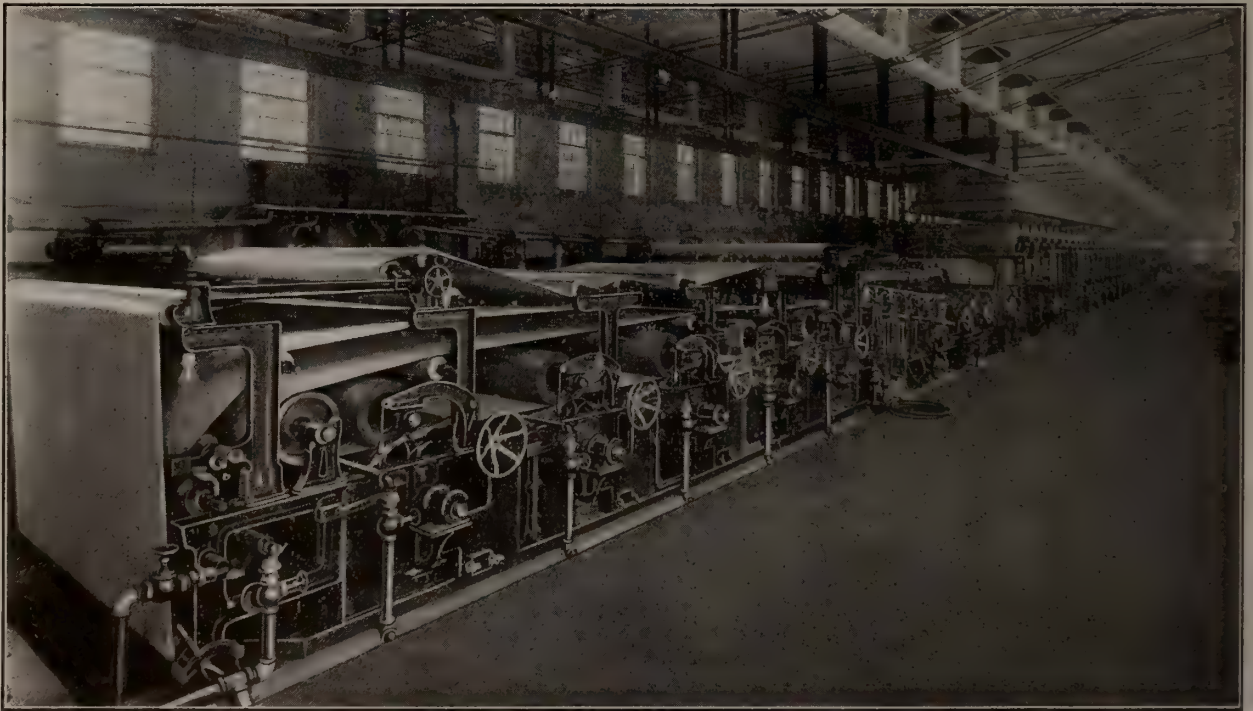
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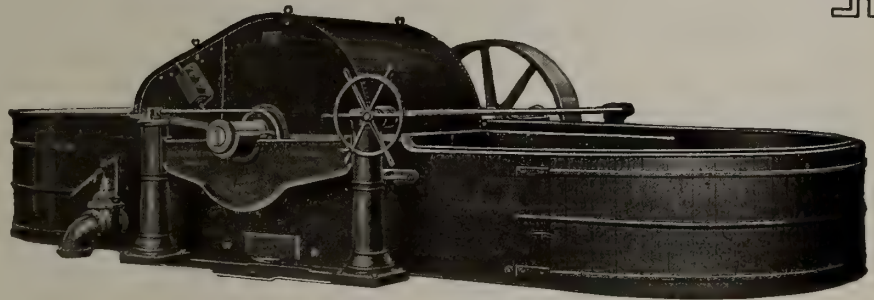
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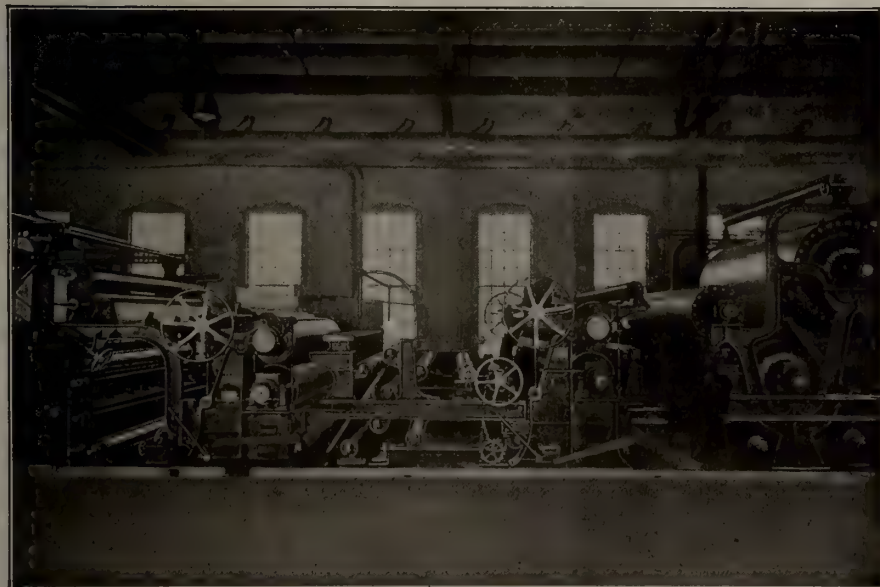
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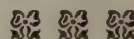
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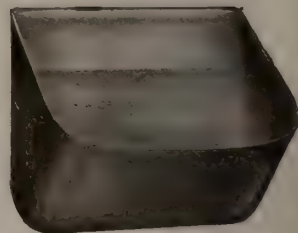
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No. 17

Paper Export Possibilities

A significant incorporation was included in the list of new companies receiving charters last week. The Export Paper Company, capitalized at \$500,000, has been formed in Canada. This incorporation, coming at a time when the export business of the pulp and paper industry is receiving fresh attention, is highly significant. A few days ago, S. F. Just, Canadian Government Commercial Agent at Petrograd, reported to the Department of Trade and Commerce that he had received a number of inquiries as to Canada's capacity for supplying writing papers of the best quality. Other inquiries for Canadian pulp and paper had been received by the department from Cape Town, South Africa, where writing papers are wanted, and from Edinburgh, Scotland, where chemical and mechanical woodpulp is required, while other Scottish houses are asking for sulphite, sulphate, pulp, cardboard, etc. These inquiries are a good indication of the many queries coming through for Canadian paper.

Last week, from the port of New York, there were shipped nearly a half million dollars' worth of paper to forty-one different countries. In the previous week exports of over half a million were sent out to thirty-two different countries. The United States is importing a great deal of her news-print from Canada, so there does not seem any real reason why Canadian paper makers should not duplicate the exporting business now being conducted from New York. Of course, there are difficulties in the way, but no great work was ever undertaken that was not beset with difficulties. The main point to be remembered is that there is a demand for our forest products, and in the last analysis it rests with our paper manufacturers to say

whether that demand shall be met or not. If it is met at a time when the world's trade channels are more or less disorganized, it will mean that Canada will secure a footing in the world's markets which will never be challenged when business resumes its normal trend.

Consul Willrich Makes a Report

According to United States Consul Willrich, of Quebec, this province exported over \$5,100,000 worth of news-print paper to the United States in 1915. Two years ago, or in 1913, the export of this commodity to the United States was little over a million, so that there has been a remarkable increase in the two years. The consul is of the opinion that the increase will continue, pointing out that the Province of Quebec possesses an abundance of undeveloped water power and practically unlimited forest resources.

While news-print exports increased, the exports of pulpwood show a decrease and ground wood also showed a decrease of some \$600,000. The decrease in pulpwood is explained by the desire of Quebec dealers to hold their wood for higher prices and to some extent to a shortage. There is also an increased demand for pulpwood in this province, which consequently lessens the export.

The figures and statements presented by the United States Consul are of interest, not in the sense that any new light has been thrown on the subjects under discussion, but as an indication of an increased interest in this question by American business men, United States legislators, business men, paper makers and publishers, are turning their eyes towards Canada and showing a considerable amount of agitation over the

whole paper situation. They are gradually coming to realize that Canada is the pulp and paper centre of the North American Continent and that paper makers in the United States must look more and more to Canada for their supplies of raw material.

A Business Getting Tour

Mr. H. R. Macmillan, Chief Forester for British Columbia, recently returned from an eighteen months' tour of several of the European countries, South and East Africa, India, Australia, and New Zealand. He expects in a short time to leave for China and Japan. Mr. Macmillan was sent by the government to investigate trade openings in connection with the lumber industry. His advance report is most favorable and it is to be hoped that a big export business will be built up as a result of his investigations. While Mr. Macmillan was primarily interested in lumber, he at the same time compiled a great deal of information in regard to pulp and paper. His experience is another testimonial in the fact that there is a big opening in other countries for all kinds of forest products of this country. Canada should bestir herself.

A Worried Journal

The Paper Trade Journal of New York is greatly excited over the proposed legislation to increase the price of duty free Canadian paper from two and one-half cents a pound to five cents a pound. The publication in question blames the United States publishers for having had the present legislation put upon the statute books of the country. The Journal is now thrown into an epileptic fit for fear the same publishers will come back and make the present situation doubly bad. It goes so far as to state, "It would seem as though legislative measures were drawn in Canada and enacted in Washington."

The Paper Trade Journal is needlessly worrying. Canadian paper makers are not vitally interested with what is enacted by the legislators at Washington. The paper makers on this side of the border know that they have the raw material, the water power, the engineering skill and an adequate labor supply which will enable them to compete with United States paper makers in any part of the world, including the Republic to the south of us. The Paper Trade Journal knows very well that economic conditions are forcing American paper makers to cross the forty-ninth parallel and to construct their new mills in Canada as this country has the raw material, which is growing so scarce south of the Line. The legislators and publishers in the United States may have contributed something to the changed conditions, but their action is rather the effect than the cause. The United States publishers know very well that in a short time they will have

to look to foreign fields for their supply of news-print and are taking time by the forelock and are removing the trade barriers which heretofore kept Canadian paper manufacturers from entering the United States market.

Among the Mills

It is understood that English capitalists under Sir Robert Perks have taken over the plant of the New Brunswick Pulp and Paper Co., at Millerton, N. B., and will rebuild on a larger scale.

The Hample Paper Box Company are erecting a \$12,000 box factory at Brantford, Ont.

Plans have been prepared for alterations to the premises of the Appleford Counter Check Book Co., Hamilton, Ont., estimated to cost \$7,500.

An addition to the premises of the St. Lawrence Paper Bag Co., at 103 Marguerite Street, Quebec, is under contemplation, and private tenders have been received for the work, which it is estimated will cost in the neighborhood of \$20,000.

The general contract for the erection of the sulphite pulp mill to be erected by the Ontario Paper Co., at Thorold, Ont., as well as the contract for an addition to the machine room of the company, has now been let and construction has begun.

The International Land and Lumber Co., whose headquarters are at Ottawa, intend erecting a 100-ton pulp mill on the Ashuapmauch River in the Lake St. John district. The company own several hundred miles of limits on the east shore of the lake. Among those back of the project are J. L. Bate, R. N. Bate and Thomas Askwith, of Ottawa.

It is stated that Price Bros. & Company, Limited, propose to make considerable enlargements to their plant. This will include the erection of a new unit to be added to the news print mill, and additions to other plants which will increase the company's production of sulphite and ground wood pulp. The new paper unit will probably be in operation by February 1, 1917, while it is expected that the other additions will be completed by October of the current year.

D. B. McDonald, Winnipeg, promoter of the Manitoba Power, Pulp and Paper Co., to be established at Grand Rapids on the Saskatchewan River, states that all plans for the project have been prepared. They include a sawmill, paper factory, pulp mill and hydro-electric power transmission plant. The capacity of the pulp and paper mills will be 100 tons a day. The whole scheme will mean an outlay of perhaps \$2,000,000.

SPANISH RIVER ENLARGING PLANT.

The Spanish River Pulp and Paper Company is increasing its capacity by adding four new grinders capable of taking 30-inch wood. It is also putting in two more Robb boilers of 275 horse-power each. The company has erected a new building for the boilers, and also a new building for four drum bakers to replace the present disc bakers.

THE EFFICIENCY OF THE WET MACHINE AS A WASHING DEVICE

By E. SUTERMEISTER.

(Specially Written for Pulp and Paper Magazine).

In the preparation of bleached fibre for use in paper making it is desirable to remove the residual chemicals as completely as possible without going to undue expense. In practice this is accomplished in a number of ways and with various types of apparatus. One method is to empty the bleached fibre, containing all its chemical residues, into drainers with false bottoms, through which the exhausted liquor is drained away, to be followed by water from above to wash out the remainder. This method causes little mechanical loss of fibre because the mass first deposited on the false bottom acts as a filter, but the washing is slow and incomplete, unless a very large amount of water is used, and it also has the disadvantage that the washed and drained fibre has to be dug out of the drainer by hand labor.

Another method of removing the exhausted bleach is by means of cylinder washers mounted on the bleaching engines. The water removed by these is continually replaced so that their action is best described as one of progressive dilution rather than washing. These cylinder washers cause very appreciable losses of fibre, especially if the covering is not kept in first class condition.

A third type of washing is that in which a considerable proportion of the liquor is removed by some means and the fibre largely diluted with water and again put through the process one or more times. This also is really a progressive dilution, but it is a distinct step in advance of the cylinder washer in that the water is not being added in the same vessel and at the same time that it is being removed by the washer. There are a considerable number of commercial equipments to accomplish this result and among them is the wet machine which is quite generally used in handling sulphite. As the efficiency of this apparatus as a washer was recently brought into question a study was made of the results obtained under actual working conditions.

The machine in question originally consisted of three cylinder moulds in separate vats, but at the time of the test only two were in use. The moulds are both 88 inches long and 36 inches in diameter, and revolve at 12 revolutions per minute. The first mould, that in the trough which the stock first enters, is covered with 20 mesh wire while the second has two coverings, the base wire being 14 mesh and the outer one 60 mesh. With this equipment this machine can be made to handle 50 tons of air dry fibre in twenty-four hours when everything is in first class condition.

The bleached fibre, mixed with the residual chemicals, enters at one end of this apparatus and is at once diluted with water. The mixture then passes over a dam into the vat in which the first mould is located. The waste water passes through the covering of this mould and is continuously removed, while the fibre mixed with a part of the water remains on its surface and is taken off by a press roll resting on its upper surface. The weight of this upper press roll regulates to a certain extent the amount of moisture carried

along by the fibre. From this roll the wet fibre is removed by a doctor which drops it into a second vat where it is mixed once more with water and from which it passes to the second cylinder mould. This operates exactly like the first one except that the fibre is taken off on a felt, passed through a press and deposited in the cars in which it is conveyed to the beaters. The actual washing operations therefore consist in diluting twice and removing as much as possible of the diluted liquors.

In studying this process the amount of dissolved calcium chloride was taken as a criterion of the completeness of the washing. This material is always present in the exhausted bleach liquor and its amount can be readily ascertained analytically. The samples for analysis were taken once an hour for periods of eight hours during the regular operation of the machine. They were collected at five different points, viz.: (1) the entire stock as it passed from the bleaching system to the wet machine; (2) the stock passing over the first mould into the vat of the second; (3) the final washed stock from the cars; (4) the waste water from the first mould; (5) the waste water from the second mould. The eight samples from each point were combined, thoroughly mixed and a portion taken for analysis. The first three samples were tested for: (a) moisture and soluble organic matter; (b) the calcium chloride which could be removed by thorough washing with hot water, and (c), the amount of bone dry washed fibre. The two waste waters, although containing a little fibre, were tested only for the calcium chloride in solution.

Two separate tests were made in this way, the first on March 26th and the second on May 12th, when the water was slightly warmer. The analyses of all samples are given in the following table:

	Stock entering %	Stk lvg. 1st mould %	Stock in cars %	Waste water 1 mld. Gms. per litre.	2 mld. Gms. per litre.
First Test.					
Moisture and soluble organic matter . .	95.48	93.63	77.72	....	....
Bone dry washed fibre	4.28	6.30	22.20	....	....
Calcium chloride . .	0.24	0.07	0.08	1.114	0.133
Second Test					
May 12.					
Moisture and soluble organic matter . .	96.82	91.67	72.31	....	....
Bone dry washed fibre	2.91	8.24	27.62	....	....
Calcium chloride . .	0.27	0.09	0.07	1.009	0.099

In order to calculate the washing efficiency of the various moulds without actually measuring the volumes of water removed it is assumed that there is no loss of fibre in the process. This is not strictly true but the error introduced is a comparatively slight one. Making this assumption it is possible to calculate from the

analytical data the amount of calcium chloride present with each hundred pounds of bone dry fibre at all the points where samples were taken and from this the proportion removed may be readily figured. The calculations for each of the tests follow:

First Test.

100 lbs. of bone dry fibre entering carry	5.57 lbs. Ca Cl ₂
100 lbs. of bone dry fibre leaving 1st mould carry	1.11 lbs. Ca Cl ₂
100 lbs. of bone dry fibre at cars carry	0.36 lbs. Ca Cl ₂
	5.57—1.11

Washing efficiency of 1st mould = $\frac{5.57}{5.57} = 80.1\%$

Washing efficiency of 2nd mould = $\frac{1.11-0.36}{1.11} = 67.6\%$

Wash. efficiency of both moulds = $\frac{5.57-0.36}{5.57} = 93.5\%$

Second Test.

100 lbs. bone dry fibre entering carry	9.25 lbs. Ca Cl ₂
100 lbs. bone dry fibre leaving 1st mould carry	1.06 lbs. Ca Cl ₂
100 lbs. bone dry fibre in cars carry	0.25 lbs. Ca Cl ₂
	9.25—1.06

Washing efficiency of 1st mould = $\frac{9.25}{9.25} = 88.5\%$

Washing efficiency of 2nd mould = $\frac{1.06-0.25}{1.06} = 76.4\%$

Wash. efficiency of both moulds = $\frac{9.25}{9.25} = 97.3\%$

The strength of the solutions of calcium chloride at the points sampled is given below in grams per litre.

	First. test.	Second test
Stock entering	2.51	2.79
Stock leaving 1st mould	0.75	0.95
Waste water from 1st mould	1.11	1.01
Stock entering cars	1.03	0.97
Waste water from 2nd mould	0.13	0.10

These figures indicate that the entering stock is diluted in the first vat to about two and one half to three times its original volume and it is, of course, still further diluted in the second vat.

The conclusions reached from a consideration of all of these results are that a two-cylinder wet machine is an efficient washing device, but that the large volumes of water required prohibited its use where water is scarce or where the soluble materials removed by washing are to be recovered by concentration.

MATTAGAMI COMPANY CHANGES HANDS.

The Mattagami Pulp and Paper Company of Smooth Rocks, Northern Ontario, has changed hands and is now owned by the Armstrongs of the New York and Pennsylvania Company. The new owners have bought out the interests of those who were engaged in the construction of the mill and will carry on the work in future. It is stated that the mill will be completed and in operation early in 1917. The Mattagami Company's officials have been succeeded by men selected by the new owners.

THE QUESTION BUREAU.

Question.—I would like to ask you if it would be possible to make a digester with concrete for slow cook sulphite?

Answer.—This would not be practicable. The expansion and contraction due to heating and cooling, would crack such a digester so that the acid liquors would leak. The pressure of the cooking steam would further open the cracks, while the acid liquor would attack the concrete and cause disintegration.

THE PAPER FAMINE.

Many Canadian newspapers received notice this week from American publishers notifying them that there would be no further exchanges sent out. This stopping of all exchanges is part of a plan to save paper. Other publishers are cutting down the size of their papers, and effecting various other economies in an effort to save white paper.

WALDEN'S A. B. C. GUIDE.

A copy of Walden's A. B. C. Pocket Guide has been received by the Pulp and Paper Magazine. This handy little volume gives full details regarding the paper makers and paper dealers in the United States and also furnishes a selected list of paper dealers in Canada. The book is published by the Walden Publishing Company, 132 Nassau street, New York City. The price is one dollar.

PULP WOOD TO BE HIGHER.

To the Editor Pulp and Paper Magazine:

Replying to four favor of the 8th inst. asking for information with regard to the supply and probable trend of prices for pulp-wood in Nova Scotia, would say that everything points to much higher prices this coming year. Laborers are very scarce and the demand for labor is so keen that many, who in past years have logged pulp-wood during the winter months will now find it more profitable to sell their services elsewhere.

SULPHITE PLANT FOR LABRADOR.

A proposal is under consideration to build a Sulphite pulp mill "somewhere in Labrador." Just where the proposed location is the promoters do not reveal, but the inspiration is said to come not very far from Buffalo, N. Y., several of whose leading citizens are already interested in similar ventures elsewhere. Considering the inaccessibility of Labrador and the difficulty of getting supplies to and from that remote region, the mere mention of such a proposal is an illuminating confirmation of the widely-held opinion that every pulp plant to-day is a veritable gold mine. To build a modern pulp mill under the most favorable conditions at present is an undertaking from which the boldest might well shrink, owing to the enormous cost of the material and labor, and what it would require in the way of capital to erect a plant on or about the Arctic Circle estimate. By far the greatest obstacle which would have to be overcome, granted the mill erected, is the fact that the pulp would have to be marketed during the few months of the year when the sea passage is open. To spread the sales over the twelve months would be impossible, and the result would be a mountain of pulp to be unloaded and take its chance of the market, good or bad, at the only time it could be moved.

THE WATER POWERS OF THE PROVINCE OF ONTARIO

In connection with the extensive Water Power exhibit of the Dominion Government at the Panama Pacific Exposition, the Dominion Water Power Branch has just issued for distribution, a series of monographs on the Water Powers of Canada. The one relating to the Province of Ontario is under the authorship of H. G. Acres, B.A.Sc., whose work as Hydraulic Engineer of the Hydro-Electric Power Commission of Ontario has long identified him as an authority on the power possibilities of that Province.

Mr. Acres clearly and comprehensively deals with the individual possibilities which go to make up nearly 5,000,000 horse-power capable of development with-

ment of capacity ranging from 1000 to 5000 horse power. The basins of these rivers contain a considerable proportion of lake and marsh and their flow characteristics are susceptible to material improvement through the agency of artificial storage. There are a number of existing developments along the tributaries of the Ottawa of capacities ranging from 40 to 100 horse power which are supplying power to local markets.

One notable site of higher capacity is High Falls on the Madawaska where the natural head can be increased to 150 feet and 12,000 horse power developed under natural flow conditions with probably 20,000



NIAGARA FALLS SHOWING DEVELOPMENT ON CANADIAN SIDE.

in the province, of which 702,000 horse power has already been developed, and in closing the author reviews the operations of the Hydro-Electric Power Commission and gives a synopsis of the regulations respecting water power in Ontario.

In reviewing this treatise an endeavour has been made to cover briefly the more important facts and to this end, all parts of the author's information has been reproduced verbatim.

From a hydraulic standpoint the more important rivers tributary to the Ottawa are the Mississippi, the Madawaska, the Bonnechere, the Petewawa, and the Montreal, along which the gradient is generally steep, and concentrated natural heads ranging from 20 to 100 feet offer numerous opportunities for cheap develop-

horse power under artificial storage.

The Cobalt district is supplied by two plants; one on the Metabitchewan operating under a 312 foot head with 8,000 horse power installed, and one on the Montreal river with 3,800 horse power installed under a head of 38 feet. It is a notable fact that since the advent of hydro-electric power, the use of steam power to operate the mines has been almost wholly discontinued.

The most important undeveloped site in this district is that known as the "Notch" on the Montreal River where a head of 100 feet is available and where about 7,000 horse power can be developed under ordinary low water condition.

With regulated flow there will be available from the

Ottawa River itself, 600,000 horse power between Lake Tamiskaming and Carillon. Development on this river is, at present, practically confined to the Chaudiere Falls at the City of Ottawa, where 36,000 horse power is now in use, and where, with complete flow regulation, it is anticipated the capacity will be raised to a minimum of 84,000 horse power.

The most important river flowing into Lake Ontario is the Trent, on which, with its main tributaries, some 75,000 horse power is capable of more or less easy development by reason of the Trent Canal works, now nearing completion. Of this total 45,000 horse power is now developed leaving 30,000 horse power capable of cheap and easy utilization.

respectively. At Wasdell's Falls on the Severn river the Hydro-Electric Power Commission has a 1,200 horse power plant in operation and at Eugenia Falls on the Beaver River is installing a 4,000 horse power plant under a head of 540 feet.

Of undeveloped sites three exist on the French river each capable of development to the extent of about 10,000 horse power with storage on Lake Nipissing. The remaining undeveloped power is distributed in blocks of 1000 to 5000 horse power; the smaller capacities being predominant.

The rivers tributary to Lake Superior are mostly short and turbulent and natural falls of 50 to 125 feet are common. There is a total potential capacity of



ABITIBI PULP & PAPER COMPANY'S PLANT.

Most of the rivers flowing into Lake Erie lack natural control as a result of the combined effects of deforestation, drainage and extensive cultivation and hence their usefulness as sources of power has been largely destroyed.

Tributary to Lake Huron are the Mississaga, the Spanish, the Sturgeon, the Muskoka, the Severn, the Saugeen and the Beaver rivers, all of importance from a hydraulic standpoint. A reasonably conservative figure gives the total low water capacity of all the Lake Huron tributaries at about 166,000 horse power of which about 56,000 horse power is at present developed, leaving an undeveloped surplus of 110,000 horse power.

Among the developed sites are two on the Spanish river; one at the High Falls and the other lower down the river, with 12,500 and 10,000 installed horse power

about 195,000 horse power of which 20,000 horse power only is developed. Of this developed power 4,500 horse power is used to operate the mines in the Michipocoten district and 15,500 horse power, developed at Kakabeka Falls on the Kaministiquia River under a head of 180 feet, is used in the cities of Port Arthur and Fort William. It is said that the Company at Kakabeka Falls has 15,000 horse power of surplus capacity capable of development. At Silver Falls on this river there is about 20,000 horse power minimum that can be developed under a 310 foot head.

The largest of the Lake Superior tributaries is the Nipigon which drops 255 feet high in its total length of 40 miles and on which there is 100,000 horse power in the main capable of easy development. This river has at its head Lake Nipigon with 1,500 square miles of water surface and receives the runoff from about



CHAUDIERE FALLS,
OTTAWA RIVER.

SPANISH RIVER PULP &
PAPER COMPANY'S PLANT



MINNESOTA & ONTARIO
POWER COMPANY'S
PLANT AT FORT
FRANCES.



9,500 square miles of drainage area. The Nipigon basin is one of the finest pulpwood areas in the world. From the information resulting from a limited study of the hydrography of that portion of the Winnipeg River lying in Ontario, it is estimated that the total potentiality of the various rivers is not less than 250,000 horse power. Of this total about 22,000 horse power is now in use.

The low natural heads existing as a general rule in the rivers of this district are in a measure offset by the splendid storage facilities offered by Rainy Lake, Lake of the Woods, Lac Seul and the innumerable smaller lakes which constitute the outstanding feature of the Winnipeg River basin. This extensive lake area provides a means of practically doubling the already large minimum flow of these rivers. Under such regulation 75,000 h.p. would be available at White Dog Falls on the Winnipeg River, and blocks of 20,000 to 40,000 horse power could be developed at each of several sites on the English river.

There is little credible information regarding the rivers flowing into James Bay and present development is confined to the Mattagami and Abitibi Rivers. On the former two plants supply 3,500 horse power to the mines and towns of the Porcupine district with 7,000 horse power capacity still available. On the latter, a 19,500 horse power plant will shortly be in commercial operation. The minimum capacity of the James Bay rivers is quoted by the Conservation Commission in its report on the "Water Powers of Canada" as being about 665,000 horse power under natural conditions. With controlled storage 1,500,000 horse power may, with a fair degree of certainty, be assumed physically capable of development.

In the water powers of the International rivers, the Province of Ontario possesses a natural asset of the first magnitude. The greatest of these is Niagara, where under franchises a total of 405,000 horse power is to be developed, of which 369,000 horse power is at present either in actual use on maximum load or in course of installation to meet immediate requirements. This power is developed by three companies and is distributed through Onatrio from Toronto west.

On the old Welland Canal development has taken place to the extent of 12,000 horse power. From the

summit level of the canal system water is carried over the Niagara escarpment at Decrew Falls where power is development under a net head of some 265 feet; 57,000 of the total horse power available being now in active use.

At the St. Mary's Rapids between Lake Superior and Lake Huron a minimum flow will produce 90,000 horse power under an 18 foot head. Half of this belongs to Ontario and at present 17,000 horse power is developed on the Canadian side.

Summary of Undeveloped Water Powers in Ontario.

The following summation is derived for the total amount of power capable of development in the Province, and includes a number of smaller rivers not specifically mentioned in the report:

	Total Capable of Development.	Developed.
Ottawa river tributaries	688,000 H.P.	71,000 H.P.
Great lakes tributaries	446,000 "	137,000 "
Hudson Bay slope	250,000 "	22,000 "
James Bay slope	1,500,000 "	10,000 "
International Boundary rivers	2,045,000 "	462,000 "
Total in Province	4,929,000 "	702,000 "

Of this total developed power about 574,000 horse power is electrical energy sold for light and power; about 69,000 horse power is used for pulp and paper manufacture; and about 59,000 horse power is used for the most part in the form of hydraulic power directly applied.

With the history of hydraulic and hydro-electric development in Ontario must always be associated the epoch making operations of the Hydro-Electric Power Commission in connection with the development and transmission of power, under joint governmental and municipal auspices. As related to the present financial standing of the Hydro-Electric enterprise, the following statistical summary deriver from the annual audit of the books of the municipalities and published in the 1914 report of the Commission is of interest:

	Dec. 31st, 1912	Dec. 31st, 1913	Dec. 31st, 1914
Number of Municipalities included in report	28	45	69
Operating and Maintenance expenses	\$1,086,135	\$1,516,613	\$2,012,754
Debenture charges and interest	291,033	525,054	661,949
Total annual expense	1,377,168	2,041,667	2,674,703
Total Revenue	1,617,674	2,617,439	3,433,936
Surplus for the Year	240,506	575,771	759,233
Depreciation Charge	124,992	262,675	357,883
Surplus Less Depreciation Charge	115,514	313,096	401,350
Total Plant Value	6,349,711	11,977,175	15,249,203
Net Debenture Debt and Overdraft	5,882,156	10,468,351	12,702,690
Accumulated Surplus Invested in Plant Extension	284,211	859,983	1,601,167
Accumulated Depreciation Reserve	240,229	502,904	850,618
Surplus from Operation	43,982	357,079	750,549
Approximate Number of Consumption-Light	33,568	63,157	93,179
Approximate Number of Consumption-Power	1,399	2,532	3,565
Total	34,967	65,689	96,744

THE NORTHERN ONTARIO PULP WOOD SITUATION

(Special to Pulp and Paper Magazine.)

Toronto, August 26th.

I have just returned from the North country, where I have studied conditions very carefully.

The pulpwood situation certainly will be very acute. There has not been burned along the railways more than fifteen thousand cords pulpwood, but the ordinary supply of wood is very short; work of clearing and men in the bush during this summer season has been very much less than usual, so that at the present time the pulpwood on hand is probably not more than 40% of normal.

The greatest individual loss in connection with the recent fire, however, was of course the Abitibi Co., who lost something over 30,000 cords from their block pile, which was stored for the winter's run. They were also short of wood and had been figuring on taking out a little more wood this summer by summer logging to make up their supply for the coming winter. This loss, however, has placed them in a very critical position, but Mr. Hennessey, their Woods Manager, is confident of being able to make up this difference. He has called for two thousand men at \$50.00 a month clear, to go into the bush and make wood at once, to be driven down this summer, and cut this Fall, for next winter's operation.

You will understand, of course they ordinarily cut their entire supply during the winter months, but they are now obliged to go into their limits in the summer to make up this difference which, of course, increases the fire hazard enormously.

The cost of wood to them at their mill, will doubtless be increased for the next twelve months by not less than \$1.50 to \$2.00 a cord.

Mr. Thompson of the Monteith Pulp and Paper Company, immediately after the fire, went over the entire line of the T. & N. O. Railway and the Transcontinental, buying up all the available pulpwood, so that there is probably now not available on the open market, in that part of Northern Ontario, one thousand cords of wood.

I also met while there some parties from Buffalo, who were endeavoring to buy pulpwood, but were unable to do so.

On account of the great scarcity of men and the enormous wages being paid in mills and factories of various kinds, logging during the coming Winter is going to be very expensive. The only available men must be brought from Quebec, which is now being done by the Mattagami Co. as well as the Abitibi Co. The Mattagami Company brought in a whole trainload last week from Chicoutimi for their bush work.

Certainly, the shortage of pulpwood is going to be very acute and will be felt to a great extent during the next twelve months. Prices are advancing, so that at Jacksonboro, a station on the Transcontinental, near Cochrane, peeled spruce wood, 2-ft. long, is selling for \$10.00 a cord, f.o.b. cars, and is being shipped to Wisconsin. This wood will cost, when delivered there, \$17.00 and \$18.00 a cord, where in the past they have been in the habit of getting wood delivered to them for \$12.00 and \$14.00 a cord.

Certainly, paper manufacturers should figure from now on, in their cost of paper an advance in the price of wood of from \$2.00 to \$4.00 per cord at their mill, and very scarce at that.

There is another matter to which attention should be called in the Magazine, and that is in connection with the fire in Northern Ontario. The blame for much of this certainly lies at the doors of the Ontario Government. Their system of fire ranging is absolutely absurd; the men they appoint are very seldom bush men at all, being in most cases old and disabled men who are not able to do any work at all; or school boys who take the opportunity to do some studying.

In many cases the fire rangers themselves have set fires in their camps, and the present class of men being sent into the country by the Government, are a distinct menace.

Further, the Government should certainly restrict settlement to well defined townships where they are in a position to provide settlers with the necessary accommodations, such as roads, schools, telephones and a good large cleared area which can be put under cultivation in one block. At the present time, settlers are scattered helter skelter over the country anywhere from five to ten miles apart, with no means of communication of any kind. They are entirely unable to protect themselves against forest fires, or support themselves under these conditions.

The Government has spent enormous sums of money cutting out roads along township lines, but these roads are not passable and are now starting up second growth. It would be impossible for any Government to build and maintain roads for settlers under present conditions. The result is they lead an isolated life, with no schools, and soon become discouraged and immediately leave the country.

The matter of settlers' fires in clearing land has never been looked after. The law provides that no fire shall be set after June 1st. This rule has never been observed. Fire rangers who are supposed to issue permits for fires and look after them when they are set, either pay no attention to the fires, or are afraid to forbid the settler setting a fire, on account of losing his vote for the Government who appoints him.

Another matter of the greatest possible importance, which is brought home by the present disaster, is that the Government when it leases or sells a timber limit to a company who invests millions in a plant, should give that company, under proper restrictions, the right to exclude people from these limits, or restrict their activities within the limits. They should be required to have a permit from the man in charge of the limits and be held strictly responsible while they are there.

Immediately a limit is disposed of by Government, and a mill is started, the value of the timber on that limit is enhanced enormously, while standing timber, without prospect of development, is of little value to the Government or anybody else.

The Pulp and Paper Magazine should urge very strongly the necessity of the Government giving to the limit holders more authority in connection with the safeguarding of their limits. They should have absolute charge and control of them, as they are in every case more interested than the Government is in preserving the forests intact.

CANADA'S PULP AND PAPER EXPORTS

Canada exported \$20,780,000 worth of paper in the year ended May 31st, 1916, as compared with \$15,969,354 for the previous twelve months period. Of wood pulp the exports for the same periods were, respectively, \$11,554,588 and \$9,314,161. In each case the increase was approximately twenty-five per cent. There was, however, a decrease of ten per cent. in the amount of wood exported. Since 1913 there has been a steady decrease in the amount of wood for pulp sent to the United States and a decided increase in the manufactured product in the form of pulp and paper.

Canada's Pulpwood Exports.

	Cords.	Value.
1904	479,238	\$1,788,049
1905	593,624	2,600,814
1906	614,286	2,649,106
*1907	452,846	1,998,805
1908	901,861	4,655,371

1909	794,986	4,356,291
1910	965,271	6,076,628
1911	926,791	6,092,715
1912	879,775	5,697,901
1913	1,003,594	6,806,445
1914	1,089,384	7,388,770
1915	1,010,914	6,817,311
1916	879,934	5,743,847

(*)—Nine months—change of fiscal year.

The decline in the export of wood for pulp began in 1914, since then there has been a marked increase in the exports of pulp as will be noted from a table appearing elsewhere on this page. The value of the mechanical and chemical pulps exported, already referred to, was about two millions more in 1916 than in 1915, but the 1916 exports, principally to the United States, were \$4,400,000 more than in 1914.

Exports of Wood Pulp.

	Total.		*Ave. Price.	To United States.	
	Cwt.	Value.		Cwt.	Value.
1916—Chemical.....	3,494,816	\$6,801,011	\$1.94	3,288,816	\$6,405,616
Mechanical.....	4,649,203	3,575,537	0.77	3,875,972	2,967,153
Totals.....	8,144,019	\$10,376,548		7,164,788	\$9,372,769
1915—Chemical.....	2,424,328	\$4,806,622	\$1.98	2,289,661	\$4,550,196
Mechanical.....	6,103,702	4,459,539	0.72	3,855,266	2,893,618
Totals.....	8,588,030	\$9,266,161		6,144,927	\$7,443,814
1914—Chemical.....	1,515,033	\$2,923,083	\$1.93	1,373,887	\$2,660,013
Mechanical.....	4,816,170	3,441,741	0.71	2,915,601	2,253,621
Totals.....	6,331,803	\$6,364,824		4,289,488	\$4,913,634
1913—Chemical.....	1,112,457	\$2,100,842	\$1.89	1,055,380	\$1,995,817
Mechanical.....	4,749,719	3,408,702	0.75	3,313,950	2,580,462
Totals.....	5,862,176	\$5,509,544		4,369,330	\$4,576,279
1912—Chemical.....	835,239	\$1,587,535	\$1.90	834,483	\$1,585,615
Mechanical.....	5,023,568	3,506,770	0.70	3,728,141	2,834,329
Totals.....	5,858,807	\$5,094,305		4,562,624	\$4,419,944
1911—Chemical.....	721,428	\$1,308,191	\$1.81	716,427	\$1,298,162
Mechanical.....	5,867,227	4,407,431	0.75	4,673,922	3,796,427
Totals.....	6,588,655	\$5,715,532		5,390,349	\$5,094,589
1910—Chemical.....	864,606	\$1,658,846	\$1.92	831,331	\$1,597,319
Mechanical.....	5,038,850	3,545,751	0.70	3,181,507	2,577,990
Totals.....	5,903,456	\$5,204,597		4,012,838	\$4,175,309
1909—Chemical.....	826,585	\$1,603,006	\$1.94	670,404	\$1,223,702
Mechanical.....	4,162,509	2,703,923	0.65	2,408,629	1,841,177
Totals.....	4,989,094	\$4,306,929		3,079,033	\$3,064,879

*Average price per cwt.

PULP AND PAPER NEWS

F. Lancaster, of Halifax, who is the Maritime provinces representative of the Canada Paper Company, spent a few days in Montreal recently on business.

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Foley-Rieger Pulp and Paper Company, who operate three ground wood pulp mills at Thorold, Ontario, turning out about fifty tons per day, intend putting a new grinder in the Davy mill and making other improvements to the plant.

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Owing to the serious and continued increase in price of all materials used in book binding the trade has advanced the figure for all kinds of binding work by twenty per cent.

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A charter has been granted to the Watchman-Warder, Limited, of Lindsay, Ontario, with a capital stock of \$40,000 to carry on a general printing and publishing business. A controlling interest in the business was recently secured by J. W. Deyell of Toronto.

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Robert Daw, who for the past fifteen years has been superintendent of Lincoln Paper Mills Company at Merriton, Ontario, has retired from that position. Previous to going to St. Catharines, Ont., he was with the Old Ottawa Paper Co., which was burned out at the time of the big fire in the Capital.

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Five hundred men are now employed in the work of fire ranging in Northern Ontario under the direction of the Department of Lands, Forests and Mines, at the head of which is Hon. G. Howard Ferguson, who states that this force is ample to prevent the spread of any fire that may again break out if an increased body is necessary authority has been given to engage the men required.

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W. J. Gage and Co., manufacturing stationers, Toronto, have been awarded the contract by the Education Department of Ontario for the new blank writing books and the Ontario Writing Courses. The retail price of the books will be two cents each with a discount of twenty-five per cent. to any purchaser at the place of publication. The new price is scarcely half that now in effect.

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At the annual meeting of the Don Valley Paper Co., Toronto, which was held last week, gratifying reports were presented covering the business of the past year. J. G. Worts, who has been vice-president and manager of the Company for some years, was elected President to succeed the late Robert Davies. Mr. Worts will also continue as manager. Wilfrid Davies was elected vice-president and H. St. Jarvis secretary-treasurer. The company are very busy and have orders ahead which will keep the plant running to capacity for many months.

A charter has been granted to the Consolidated Stationery and Fancy Goods Company, Limited, with headquarters in Winnipeg and a capital stock of \$75,000. The company are empowered to carry on business as stationers and book sellers, publishers, printers and lithographers.

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The whole of the assets and undertakings of the Swanson Bay Forests, Wood Pulp and Lumber Mills, Limited, at Swanson Bay, B. C., have been taken over by the Empire Pulp and Paper Co., Limited, which has been granted a charter, with headquarters in Vancouver and a capital stock of \$2,500,000. It is understood that the sulphite mill at Swanson Bay, which has been idle for some years, will again be put in operation. The mill has a capacity of twenty-five tons a day and is equipped with two digesters and a one hundred inch drying machine.

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The Abitibi Power and Paper Company, Limited, have awarded contracts for two new, news print machines, each 232 inches wide, to Charles Walsley and Company, Limited Bury, England, which they expect to have installed at Iroquois Falls, Ontario, by the end of next year. They will bring the news production of the plant up to over four hundred tons a day. The company are also increasing their power plant and developing new power at Twin Falls, to the extent of 25,000 horse-power. Ground wood production will be increased to 350 tons per day and the capacity of the sulphite plant to 125 tons.

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A presentation was made on August 22 by the employees of the Canada Paper Co., Montreal, of a wrist watch to S. Brocklehurst, who has enlisted for overseas service with the 199th Battalion, Irish Canadian Rangers. The presentation was made by H. B. Donovan, sales manager of the company, who spoke highly of Mr. Brocklehurst's services and assured him that his old position would be ready for him when he returned. Mr. Brocklehurst has been with the Canada Paper Co. for about eight years, being head of the warehouse staff. He is the fourth brother in the family to enlist.

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It is understood that the stock of the Provincial Paper Mills Co., Toronto, who have plants at Mille Roches, Thorold and Georgetown, Ont., will shortly be placed on the unlisted stock of the Montreal and Toronto exchanges in order to establish a definite market value for the shares, which are all held by private interests at the present time the Provincial Paper Mills Co., are the largest concern in the book, bond and writing paper line in Canada and all their mills have been operating for many months to fullest capacity while the orders on hand are sufficient to keep them rushed for a long period.

M. J. Hutchinson, business-manager of the Bulletin, Edmonton, Alta., was in Montreal and Toronto last week on business. He says that the growing scarcity of news print together with the increasing cost is causing the publishers in the West to materially cut down the size of their papers.

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John Firstbrook, of Firstbrook Brothers, Limited, box manufacturers, Toronto, has received a communication from his son, John, who is now in Gottingen, Germany, where he is now a prisoner of war. Flight Lieut. Firstbrook was reported missing in July, but now states that he is doing well.

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Pulp and paper mill operators are everywhere faced with the scarcity of not only skilled hands in the beating room and around the machines but ordinary labor. The situation is growing more acute all the time. The James O. Heyworth Co., who have the contract for building the new 3 million dollar power canal for the Great Lakes Power Company at Sault Ste. Marie, a portion of which power will be used by the Lake Superior Paper Co., have been paying twenty-seven and a half cents an hour for common labor and find it difficult to get men, while the Great Lakes Dredging Co., have been unable to secure what help they require at thirty-five cents an hour.

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J. L. Englehart, chairman of the Timiskaming and Northern Ontario Railway Commission, is an enthusiast over the north and thinks that the recent fires will cause no permanent set back in conditions or settlements. The forests of the agricultural lands are spruce, spruce without a tap root, and the trees are not large. Twenty per cent. of them are about sixteen inches in diameter, but the average is not more than ten at the outside limit. Every acre of spruce in the north will average eight cords which the settler can clear with a cross-cut saw and his hands. The value of the spruce delivered alongside the T. & N. O. line is six to seven dollars a cord Mr. Englehart believes with the demand for pulp wood exceeding the supply that it pays the settler for the labor in clearing his own land for his own homestead.

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S. R. Armstrong, late general manager and vice-president of the New York and Pennsylvania Co., New York, who own several pulp and paper mills located at Johnsonburg, Pa., Willsboro, N.Y., and Lock Haven, Pa., has arrived in Toronto and entered upon his new duties as general manager of the Mattagami Pulp and Paper Co., A. G. McIntyre having retired. The company are erecting a seventy-five ton sulphite mill at Smooth Rock Falls, Ont. Mr. Armstrong has had twenty-seven years practical experience in the manufacturing and construction end of paper and pulp mills, having until June last been identified all his life with the New York and Pennsylvania Co. It is likely that the present members of the staff will be retained. George F. Hardy, of New York, will have supervision of the engineering work in connection with the new plant and power house. Good progress is being made at Smooth Rock Falls, where several hundred men are engaged. The three mile spur line has been completed and the footings for all the buildings are well under way while the structural steel is on hand and will soon be erected.

The mill of the Thomson Paper Company near Newburgh, Ontario, has been purchased by L. F. Houpt, who is President of the George Irish Paper Company, Buffalo, and the Monarch Paper Company, Toronto. Mr. Houpt was in Toronto last week closing up the transfer. The plant, which has been idle for some years, will be operated under the name of the Houpt Paper Company, Limited, which organization will soon secure a charter. The present equipment, consists of three beating and one Jordan engine and a sixty-two inch Fourdrinier machine. It is understood that the plant, which had turned out wrapping papers, will produce high grade bond papers. Orders have already been placed for additional beaters and a Jordan engine as well as an eighty-four inch Fourdrinier machine while the property will be overhauled. It is expected that manufacturing operations will start about the beginning of November. George B. Thomson will be the resident manager of the mill.

Notes and Queries

The first question in this department arose with the last issue. It is — Where are the questions? and another question arises, Does the Journal get past the office? It is hoped that this column will be fed by the technical men in the mills both as to questions and answers, supplemented by co-operation of the executive of the Technical Section.

What about the breast roll?
 What about new felt troubles?
 What about new wire troubles?
 What about static electric troubles?
 What about shake?
 What about Compound Levers?

A question of any of these lines might bring forth a lot of practical ideas worked out by foremen, machine tenders or others.

THE WILKINSON BARKER ATTACHMENT.

The Wilkinson Barker Attachment recently patented by Jenckes Machine Company Limited, of Sherbrooke, Que. was designed to increase the efficiency of the ordinary Disc barker, and has proven its worth during the past two years. It has been installed on old and new machines, in some of the largest and most up to date Rossing mills, in Quebec and Nova Scotia. It is especially well adapted for mills where floor space is lacking and an increased output is desired, without the added expense of building, shafting, pulleys and belting, as it does not increase the floor space required by the old machines. It not only doubles the product of the old machines, but it cuts down labour cost about 33 per cent over the ordinary method.

It is also most economical in operations as the feed can be as sensitively manipulated, as when handling the block by hand. It is simple in construction, operated at very low cost of upkeep, and for new installations when mounted on any seven knife disc barker, is not excelled by any machine on the market.

CANADA PAPER TO ENLARGE.

The Canada Paper Company will enlarge their mill at Windsor, Quebec. A building 100 feet long by forty feet wide will be constructed.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, August 29th.

In order to take care of increased capacity of the sulphite mill, extensive addition are being made to the plant of the Carthage Sulphite Pulp & Paper Company, Carthage, N. Y. The screen room, which is at present a one-story structure will be rebuilt into a two story building. Another addition is to be used as a machine shop. At present the machine shop is located in the basement of the mill. This new building will be fifty-five feet wide at one end, ten feet on the other end, with ninety feet sides.

The American Writing Paper Company of Holyoke, Mass., is obtaining good results from the research work being done by a group of college students employed at its writing paper mills during the present summer. The students are from the Massachusetts Institute of Technology, the University of Michigan, and others. Part of the students are engaged in the chemistry department and others in the engineering department. The vital statistics are being compiled under the direction of Henry P. Carruth, who is assistant to Wilhelm A. O. Webber, and a number of important discoveries have been made.

The mill of the Northern Board & Paper Mills, which was completed last winter, at Sumner, Wash., is running up to its capacity and taking care of the waste paper secured from Seattle, Tacoma and Portland.

Advices from the Pacific Coast state that the Floriston Pulp and Paper Mills of Floriston, Cal., are running full on tissue and fruit paper with a good supply of pulpwood on hand, also the three paper mills operated by the California Paper & Board Mills, are extremely busy on all of their lines.

The Continental Paper Bag Company of 17 Battery Place, New York, has declared the regular quarterly dividend of $1\frac{1}{2}$ per cent. on the preferred stock, payable August 15th on stock of record August 8th.

About \$200,000 will be spent on the soda ash factory which the Ohio Valley Alkali Co., will build at Huntington, W. Va. This corporation has been chartered with a capitalization of \$350,000. It is a subsidiary of the Glass Brick Company, Huntington, which will consume the output of soda ash used in manufacturing glass. The incorporators are H. E. Marble, F. Mayer, A. C. Rolges and N. H. Maxwell of Cincinnati, and P. Barton of Norwood, Ohio.

A new addition to the mill of the Hollingsworth & Whitney Company at Winslow, Me., will be built on the south side of the mill and will greatly increase its capacity. Actual construction will be started in about a week.

Representative Hastings of Oklahoma, recently introduced a resolution in the House authorizing the President to lay an embargo upon exports of print paper; to relieve present shortage, until the Federal Trade Commission makes its report to the Senate on the paper situation. The resolution stated that the price of print paper had doubled with the last six months, believed to be due to exportation to Europe and increased manufacturing costs. It was referred to the Foreign Affairs Committee.

Work has been started on a branch plant at Niagara Falls, N. Y., for the W. Ralston and Company, Limited, of Manchester, England. The plant will be built in Whirlpool street, near Spruce avenue. The estimated cost is \$20,000. It is expected the plant will be put in operation on or about October 1st next. The company will manufacture wrapping paper for shipping purposes. Industrial Agent George W. Knox who secured the new mill claims that Jersey, N. J., offered the company a free site and free power for one year, but the Ralston concern decided that the proximity to Canada and unlimited power here made the Falls the best place to locate. George W. Chadwick, will be the general manager of the plant.

The Oxford Paper Company, has just secured the service of Harry B. Mills, of Clayton, N. Y., to manage its Portland office. He will have charge of the traffic department of that concern, handling both incoming and outgoing freight.

The Motion for the sale of the National Box Board Company's plant of Middleton, Ohio, was argued in the Common Pleas Court during the past fortnight. W. O. Barnitz, the receiver, secured an offer several weeks ago from a number of mill men and Miami Valley capitalists for the purchase of the property as a going concern. More than \$125,000 figures in the deal. The receiver had taken a neutral stand in the matter and placed the matter in the hands of the court. He stated to the court that from March, 1915, when he succeeded Charles Shartles as receiver, up to June 30, 1916, the plant was operated at a profit of \$13,000. He also explained that when he had taken over the property there was a deficit of \$14,000 from the proceeding receiver.

Manufacturers of straw paper and board are gratified over the prospects of a good straw crop. Already most of the harvesting has been completed and manufacturers are enabled to learn where they stand in the matter of supply for the coming year. It is reasonably certain that there will be a fair amount of straw available for makers of this grade of paper, though the crop turned out much better than had been anticipated earlier in the season.

The Bryant Paper Co. of Kalamazoo, Mich., is now operating its machines at full capacity. Most of the damage done by the flood early in the summer has been repaired and the mill is now turning out as much paper as ever before. It happened that the machines put out of commission by the flood were the biggest in the mill, but they are now in full operation.

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Writing to friends at Carthage, N. Y., Peter Yousey, general manager of the Monteith Pulp & Timber Company in Northern Ontario, says, "I must write a little news about the fire," said Mr. Yousey in a letter to his wife. "I am well and all right, as is everybody in Moneith. Most every town north of here is in ashes. Whole families are wiped out. I saw one boy today who was the only one out of a family of ten not burned. We made coffins all day Sunday in the mill. I heard tonight that a good contractor of ours lost his whole family. Just a little way from here there were fifty-seven lying beside the railroad track, some of them with their legs and hands burned off. All these people were trying to come to Monteith. Many drowned in wells. There are about one hundred out of towns people living here in cars and school houses. We were very well organized in the mill before the fire, but I think it will take two weeks before we can do much. We lost a little pulp along the river, but not much. The company fortunately escaped with little loss. It is probable that four hundred people lost their lives."

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The Boston News Bureau in an article published during the past fortnight says; a year ago or two of net profits such as the American Writing Paper Company was able to roll up during its half year to July 1st, would put the company in splendid financial shape and would solve the problem of meeting the maturity of the first mortgage 5s. in 1919. "It is understood that during the first half year the company accumulated profits above the \$475,000 required for interest and sinking fund obligations of about \$1,000,000. This sum is equal to eight per cent. on the \$12,500,000, preferred and means that for a six months stretch the company earned at the rate of 16 per cent. on its senior stock issue. "For a company which earned deficit of \$126,955 after charges during 1915 and which for two previous years did not cover its interest and sinking fund requirement, this is certainly a comeback with a vengeance." In the best fiscal year it has ever had American Writing Paper was not able to produce quite 4 per cent. for its preferred shares. Already in the half year the company has, therefore, outstripped any previous full year by a margin of 100 per cent. to the good. While all this is excellent it is well to bear in mind that a good deal of the remarkable record of the June half year was due to the fact that finished papers were being made from low cost raw materials. In the natural course of things these low priced raws will begin soon to be exhausted. The second half year may show good earning power, but can hardly hope to equal the first. If it does half as well, it will be a most satisfactory record."

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Spontaneous combustion is said to have caused the fire which damaged one-story building and stock of the Lang Paper Company at 200 North Ninth street, Philadelphia. A quality of paper and rags stored in building destroyed and roof of building fell in when girders became weakened by heat.

With the large addition to the Keyes Fibre Plant at Fairfield, Maine, and building of the new railroad bridge at Fairfield, there is an unusual amount of industrial and manufacturing activity in this community at the present time. The addition to the Hollingsworth & Whitney mill will be welcomed by the residents as everything that adds to the production of the mill has a very direct bearing on the prosperity of the two places.

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The Middleton Paper Mills at South Middleton, Mass., have been taken over by the Gilet Carbonizing & Degreasing Company, of Lowell. The company has begun to prepare the plant for carbonizing wool. The Middleton paper mills were built years ago, and were operated with more or less success until about ten years ago, when the company operating them went into bankruptcy.

Pulp and Paper Notes

\$10,000,000 corporation has been formed and site purchased for factory at Greenwood, Miss., to make paper pulp from cotton stalks.

3,900 papers and periodicals in Germany have ceased publication since war started. In 1914 Germany had 9,000 publications.

Revenue bill reported a few days ago by Congress would place on the free list print paper costing up to 5 cents a pound. Under existing law paper costing up to 2½ cents a pound is on the free list.

Scarcity of French briar has caused American pipe makers to look to United States forest service for substitutes. Government laboratories are experimenting with various native woods. Mountain laurel roots are being used in pipe making.

A new \$500,000 concern known as the Export Paper Company, has been incorporated with headquarters in Montreal.

Charging that manufacturers and middlemen in the news-print trade have entered into combination which threatens to put many newspapers out of business, President Scott of International Typographical Union, demands action to protect those affected. He says combination threatens to force many members of the trade out of employment.

A LUCKY PAPER MAKER.

Mr. H. J. Dunlop, employee of the Canada Paper Co., Windsor Mills, Ont., is the holder of the lucky number 3589, winning the Chevrolet Car which has been raffled for the benefit of the regimental funds of the 178th C. F. Overseas Battalion, commanded by Lieut.-Col. de la Bruere Girouard.

LAURENTIDE ANNUAL.

The annual meeting of shareholders of the Laurentide Company has been called for Tuesday, September 5th, at noon in Montreal.

PRODUCTION AND SHIPMENT EXPORT FOR JULY

The News-Print Manufacturers Association has sent out the following report:—

Month of	Companies re- porting	Production				P.c. of maxi- mum	Shipments		Total stocks on hand at all points
		Maximum in tons.		Actual in tons			Total tons during month	P.c.of maxi- mum	
		Per month	Per day	Per month	Per day				
United States Mills.									
1915									
Year average	33	1232456	3976	1001662	3231	81.2	1031832	83.7	54592
1915									
July	33	102908	3958	82637	3178	80.3	82727	80.3	63123
1916									
January	32	101166	3891	88522	3405	87.5	88461	87.4	54255
January	32	97275	3891	82566	3303	84.4	81712	83.5	55616
2 Months		198441	3891	171088	3355	86.2	170173	85.7	
March	32	105057	3891	91110	3375	86.7	96305	91.6	51523
3 Months		303498	3891	262198	3362	86.3	266478	87.8	
April	32	97275	3891	87860	3514	90.3	96088	98.7	44232
4 Months		400773	3891	350058	3398	87.3	362566	90.4	
May	32	105057	3891	96224	3564	91.5	95930	91.3	46188
5 Months		505830	3891	446282	3433	88.2	458496	90.6	
June	31	99996	3846	94361	3629	94.3	97582	97.5	44310
6 Months		605826	3883	540643	3466	89.2	556078	91.7	
July	31	96150	3846	86321	3453	89.7	89997	93.5	40961
7 Months		701976	3878	626964	3464	89.3	646075	92.0	
Canadian Mills.									
1915									
Rear Average.. . . .	11	503285	1624	428858	1383	85.2	428821	85.2	25898
1915									
July	11	45136	1736	35712	1352	79.2	36597	81.0	29951
1916									
January	12	43950	1758	41817	1673	95.1	37944	86.1	29831
February	12	43950	1758	41833	1673	95.1	41244	93.8	30485
2 Months		87900	1758	83650	1673	95.1	79188	90.0	
March	12	47466	1758	45396	1681	95.6	46902	98.8	28979
3 Months		135366	1758	129046	1676	95.3	126090	93.1	
April	12	43950	1758	41572	1663	94.5	46785	106.4	23766
4 Months		179316	1758	170618	1672	95.1	172875	96.4	
May	12	48627	1801	47048	1743	96.7	48006	98.7	22824
5 Months		227943	1767	217666	1687	95.4	220881	96.9	
June	12	46826	1801	45790	1761	97.7	47847	102.1	20767
6 Months		274769	1773	263456	1700	95.8	268728	97.8	
July	12	45275	1811	43856	1754	96.8	42487	93.8	22136
7 Months		320044	1778	307312	1707	96.0	311215	97.2	

United States and Canadian Mills

1915										
Year Average	44	1735845	5600	1430520	4615	82.4	1460653	84.1	80490	
1915										
July	44	148044	5694	118349	4552	79.9	119324	80.5	93074	
1916										
January	44	145116	5649	130339	5078	89.8	126405	87.1	84086	
February	44	141225	5649	124399	4976	88.0	122956	87.0	86101	
2 Months		286341	5649	254738	5028	88.9	249361	87.0		
March	44	152523	5649	136506	5056	89.4	143207	93.8	80502	
3 Months		438864	5649	391244	5038	89.1	392568	89.4		
April	44	141225	5649	129432	5177	91.6	142873	101.1	67998	
4 Months		580089	5649	520676	5070	89.7	535441	92.2		
May	44	153684	5692	143272	5307	93.2	143936	93.6	69012	
5 Months		733773	5658	663948	5120	90.4	679377	92.5		
June	43	146822	5647	140151	5390	95.4	145429	99.0	65077	
6 Months		880595	5656	804099	5166	91.3	824806	93.6		
July	43	141425	5657	130177	5207	92.0	132484	93.6	63097	
7 Months		1022020	5656	934276	5171	91.4	957290	93.6		

HOUPPT PAPER COMPANY.

Lewis F. Houpt of Buffalo, N. Y., has purchased the Thomson paper mills at Newboro, Ontario, and has organized a company and is having the building repaired and machinery installed. George B. Thomson is the president and the concern will be known as the Houpt Paper Mills, Limited, and will manufacture all high grade bond papers. Mr. Houpt is now president of the George Irish Paper Company, Buffalo, and the Monarch Paper Company, Limited, Toronto.

RETURN PRIVILEGES.

In an effort to meet the shortage in white news print paper, the publishers of the eight daily newspapers in Milwaukee have decided to abandon the return privileges of unsold papers to all dealers and others. This arrangement will affect all morning, evening and Sunday editions. Exchange lists also have been revised and other steps may be taken to meet the unprecedented increase in prices of paper.

THE PAPER SUPPLY.

United States and Canadian mills had on hand at the beginning of this month only about a fortnight's supply of news-print, according to official returns of the industry. The July shipments of American mills exceeded production by 3,676 tons, but the situation was partly retrieved by the ability of Canadian mills to produce 1,369 tons more than they shipped.

Between July, 1915, and July, 1916, stocks of news-print in the United States and Canada declined approximately 30,000 tons, or 32 per cent. It is obvious from the production figures that the newspapers of this continent will have to look to Canada to meet any further expansion in consumptive requirement. Duty free paper (if valued at $2\frac{1}{2}$ cents a pound or less), combined with the prohibition against shipment of wood from Crown lands in Canada, have made of the American news-print industry a static production. Thus, while American mills increased production in July only 4,684 tons over the previous July, to a total of 86,321 tons, Canadian mills increased their output 8,144 tons to 43,856 tons.

PAPERS FOR PAPER MAKERS.

The indications are that a large number of interesting papers and reports will be presented for discussion at the different sittings of the Technical Association to be held in New York, September 25-30. Papers and reports which have been promised or are already in hand include the following:

A Study of Some of the Factors Influencing the Retention of Fillers by Paper Pulp. By Professor John D. Rue, Department of Chemical Engineering, University of Michigan, and F. Edwin Ford, holder of the Paper Manufacturers' Fellowship at the University of Michigan, Ann Arbor, Mich.

Management of the Beater Room. By A. B. Green, of S. D. Warren & Co., Cumberland Mills, Me.

Some Chemical and Physical Reactions of Rosin Sizing Solutions. By J. A. De Cew, Process Engineers, Limited, McGill Building, Montreal, Canada.

Some Problems in the Drying of Paper. By Jay Grant De Remer, of Martin & De Remer, New York.

Pulpwood Cultivation and Conservation. By Professor P. S. Lovejoy, Department of Forestry, University of Michigan, Ann Arbor, Mich.

Automatic Pressure Regulators for Woodpulp Grinders. By E. C. Morse, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

United States Government Publications Pertaining to Pulp and Paper. Report of Committee on Bibliography, Henry E. Surface, chairman.

Abstracts of Foreign Literature of Pulp and Paper. Report of Committee on Abstracts, Prof. J. N. Stephenson, Department of Chemistry, University of Maine, Orono, Me., chairman.

PRICE BROTHERS DECLARE DIVIDEND.

An initial dividend of $1\frac{1}{2}$ per cent has been declared by Price Brothers thus indicating that the company's affairs are in a prosperous condition. Net profits in 1915 were \$913,013 as compared with \$594,010 in 1914, and \$393,964 in 1911.

The Truth About Ontario's Forest Protection System

By Robson Black, Secretary, The Canadian Forestry Association, Ottawa.

In the face of the appalling forest fire tragedy in Northern Ontario, press and public are inquiring diligently as to the causes of forest fires, the methods of fire prevention, and are asking very frankly if the Provincial Government can entirely shake off responsibility for the heavy harvest of death and destruction.

The sacrifice of timber wealth, of entire towns, of maturing crops, has been a severe blow, particularly at a time when the guarding and developing of national wealth are accepted as keys to victory in the World War, but the conscience of the public has been far more deeply affected by the sacrifice of unreplaceable lives.

The time to block forest conflagrations is, paradoxically, before they commence. Well-organized forest protection systems in British Columbia, Nova Scotia and sections of Quebec, as well as in the United States and Europe, have demonstrated the comparative ease of preventing fires from starting. After the fire is well under way, the same carefully organized systems can usually succeed in isolating the flames and greatly reducing the damage. Success in preventing and in fighting forest fires pre-supposes a condition of affairs to which the Ontario Department of Lands and Forests is yet a stranger. Nothing but a radical overhauling of the forest service of the province can give the people any assurance that 1917 will not witness a catastrophe even more violent.

In the first place, the forest service of Ontario is built on a very old model. While spending \$300,000 a year on "protection" not more than a portion of that sum is represented in "value received."

The patrol of areas such as the "Claybelt" makes no pretence at thoroughness; educational work in fire prevention has been very slight, and the flimsiest provision made against such fearful onslaughts of flames as have now taken their ghastly toll.

Ontario, outside the Reserves, possesses very little equipment as telephone lines, trails, highways, lookout towers and cabins, such as are absolutely essential to any effective system of defence against fire.

Real "Rights" of Settlers.

One particular point of deficiency, emphasized by the recent fires, is in the ability to control settlers' burning operations. Quebec, British Columbia and Nova Scotia empower their fire guardians to penalize a settler who starts a clearing fire without written permission from a qualified ranger. In dry hot spells fires of all kinds may be absolutely prohibited in prescribed areas, and at all times, even of comparative safety, slash is piled properly or fire lines cut around the clearing. Ontario takes no such precautions, although representations to that effect have been energetically made to the Government year after year. The settler is allowed to burn precisely as carelessness or ignorance may dictate and annual holocausts will remain possible until that "liberty" is sensibly curtailed.

The settlers going into Northern Ontario have a perfect right to demand that their lives and property shall be guarded by the Government to the best of its

power. The recent fires doubtless helped to clear some land for agriculture, but for every acre so assisted, probably four or five acres of non-agricultural tree-growing land were affected disastrously. Certainly the danger of future fires has increased, as the areas of fire-killed timber widen, so that in a year or two, a mass of windfallen debris will present a perfect target for fresh conflagrations. If forest protection was needed early in 1916, to prevent the tragedy that has now occurred, it will be needed vastly more to offset a recurrence on a far worse scale in years to come.

If evidence were needed that the forest protection system of Ontario requires a far-reaching and determined overhauling, that evidence will be found in a perusal of the 1915 report of the Ontario Department of Lands, Forests, and Mines. Both by what the report states and by what it neglects to state, may be judged the wisdom of the Canadian Forestry Association's efforts to cause a re-organization of the Ontario ranger service, and place forest guarding among the creditable performances of the provincial government.

Two or three facts stand forth clearly: Neither the Ontario Government, the wood-using industries, nor the general public have more than a remote knowledge of the annual losses from forest fires. Only in patches of the forested area, mostly along the railways, is any consistent effort made to more than note the number of fires. The character of the timber destroyed, its acreage, etc., are immeasurably the most important features and under the present system are not reported on by the rangers and supervisors in anything even approaching an adequate way.

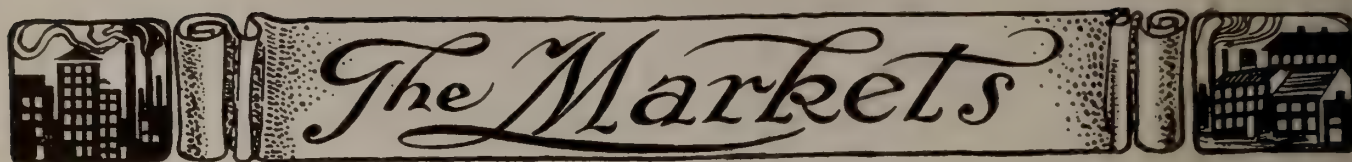
Why This Difference?

The Ontario limit holders are paying for their fire ranging considerably more than twice as much per acre as the limit holders included in the St. Maurice or Lower Ottawa Protective Associations of Quebec, although the protection afforded the latter is superior.

It is a well-established fact that railways, taken as a whole, are no longer the main source of timber losses throughout the Dominion. This is, to a very large extent, directly due to the increased efficiency of the railway fire protective organization, working under the regulations of the Railway Commission. These regulations impose stringent requirements in the direction of fire protective appliances on locomotives, control of right-of-way clearing operations, patrol of forest sections, action by all regular railway employees in reporting and extinguishing fires, etc. As a result of all this, both the number of fires caused by locomotives and employees and the amount of property destroyed is decreasing rapidly.

Having regard to these facts, note the representations of the Ontario Department of Lands and Forests, which should be an accurate and complete mirror of forest losses and their causes during the year under consideration, 1915.

Out of a total of 430 fires of all kinds, reported to the Department by its own patrolmen and rangers in
(Continued on page 47).



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The activity in news print continues and prices for spot deliveries or on limited quantities, not on contract, rule high. Publishers are taking every precaution to meet the situation by conserving supplies and reducing the size of their papers while a number of weekly and trade journals are not only cutting down margins, but are using news print paper instead of book. Those still printed on the latter find, on renewing contracts, that they have to pay from two to three cents higher. A number of publishing houses have set down the rule that the basis of contents shall be one page of reading or editorial matter to every two pages of advertising. In the meantime paper concerns are rushing machines to the utmost capacity in order to meet the demand. There are no reserve news stocks.

The faith that the public has in the future of Canada as a great pulp and paper producing country, is evidenced by the figures, constantly ascending, on all listed stocks. More paper concerns will be listed in a short while, and, at least, three pulp and paper mills in the Dominion, which have been idle for some years, will soon be put in operation again.

Some delay has occurred into the investigation in the United States regarding the alleged news print shortage owing to the fact that newspaper publishers are not sending in their schedules as speedily as possible. The reason given is the fear on the part of the publishers that their reports may reach the manufacturers and their supplies be cut off. The publishers have been assured, however, that all returns will be treated as confidential and the Commission hopes to present its report as soon as possible. Canadian news print manufacturers who sell principally in the United States say there is no reason why their customers should not give full data respecting any business which they may have. There is nothing to hide and the producers are quite willing that the fullest inquiry should be made. They contend that there is no hold up in quantity or prices on their part and that they are not taking advantage of the situation to benefit themselves. The figures prevailing are based on supply and demand and on no other foundation.

Ground wood is steadily going up in price and owing to the increasing cost of pulp wood, the growing shortage and labor difficulties it is necessary that higher figures be obtained. No 1 is now bringing twenty-two dollars and, in some cases, more at the mill. Owing to the depletion of nine hundred tons a day of sulphite in the United States due to the decrease in imports from Scandinavian countries, a number of mills are making use of wood pulp wherever possible or using a larger percentage than in the past.

It is interesting to note that a recent report from Washington says that over two thirds of the more than a billion pounds of wood pulp imported into United States during the last fiscal year and used in the manufacture of paper, came from Canada. The pulp

importations in the last twelve months across the border have been 180,000,000 pounds less than for the previous twelve months, yet the amount shipped to the United States from Canada during the past year was 130,000,000 pounds in excess of 1914-15 shipments from Canada. Nearly seventy per cent. of the pulp used at present in the United States comes from the Dominion and no wonder that new mills are springing up in Canada at a rate never known before and that undertakings now under way are being rushed to completion to cope with the present situation.

There has been another increase of about ten per cent. in wrappings making the fifth that has gone into effect within the past few months. Kraft has also taken a stiff jump, and in less than ten lots for M. G. product is now bringing ten cents. When this figure was predicted some time ago by knowing ones consumers thought that such prophets were dreamers but the dream has come true.

The following prices are now quoted by producers for wrapping and kraft papers.

	Car load lots.	One ton lots or up.	Less than one ton.
Grey Browns	\$3.75	\$4.00	\$4.25
"B" Manilla	4.50	4.75	5.10
Manilla No. 1, heavy	6.00	6.35	6.75
Manilla No. 1, light		Five per cent extra.	
Fibre	5.75	6.10	6.50
M. F. Kraft	8.50	9.00	9.50
M. G. Kraft	9.00	9.50	10.00

In regard to the prices of sulphite pulp there is much anxiety prevailing on the part of consumers regarding what they will be charged when contracts are renewed in October and November. The quotations for both bleached and unbleached keep soaring. In the matter of book sulphites the large proportion of it came from Scandinavia, and from Germany, Austria and Finland before the war. During the past eighteen months not a ton has reached America from the three latter countries, and as supply and demand govern any commodity this is the principal reason for the present high quotations, coupled with the insistent requisitions that have come from across the line particularly during the past twelve months, when importation began to dwindle very rapidly and are now only about fifty per cent. of what they were a year ago.

Another element, which has entered into the present high price situation is that little or no rags or chemicals necessary in making paper have been imported during the past two years. At the beginning of last year there were about fifty-five thousand tons of foreign sulphite on the Atlantic seaport while today most of the imports go direct to consumption, and the constant chasing of the mills for domestic sulphite is such that the pulp is being shipped direct from the machine to the cars.

Speaking of the situation the other day a leading manufacturer said, "I do not want to be an alarmist

or unduly color the situation but the trade do not seem to realize how thin the ice is on which they are skating on in reference to raw supplies of all kinds. What would happen should there be any interruption to the market's imports from Scandinavia. If a fire or accident should visit one of the large sulphite mills in this country it would be a very serious blow, as it takes fully a year to erect a new mill and get in operation."

There is a disposition not to renew contracts which have expired, but to wait until later on in the fall so that not only the consumer but the mills may size up matters better and more clearly for the coming year and a fairer basis of agreement may be reached. The market meantime continues very firm and there is no relief from the shortage in chemical fibres, all the mills being well sold up. Sellers have no difficulty in disposing of all stocks that they can get at the present high level of values.

In the book and writing paper line there is a congestion of orders and the mills do not know which way to turn to meet them. Every plant has business ahead sufficient to keep it employed until well on into the coming year. There is apparently not let up in the demand.

There has been another advance in all lines of bristol papers and specialties owing to the high cost of raw materials. In the rag and paper stock arena, all grades are going up. Book and ledger stocks are strong while mixed papers have taken a jump Manillas and white shirt cuttings are also very active.

The following prices prevail f.o.b., Toronto:

Paper.

News (rolls) \$2.40 to \$2.50, at mill, in carload lots.
 News sheets), \$2.65 to \$2.75, at mill, in carload lots.
 Book papers (carload), No. 3, \$6.00.
 Book papers (ton lots), No. 3, 6.00c to 7.00c.
 Book papers (carload), No. 2, 7.50c to 8.00c.
 Book papers (ton lots), No. 2, 7.75c to 8.50c.
 Book papers (carload), No. 1, 8.25c to 9.00c.
 Book papers (ton lots), No. 1, 8.25c to 9.00c.
 Sulphite bonds, 10 cents up.
 Writings, 8½ cents up.
 Grey Browns, \$3.75 to \$4.25.
 Fibre, \$5.75 to \$6.50.
 Manila, No. 1, \$6.00 to \$6.75.
 Manila, B., \$4.50 to \$5.10.
 Unglazed Kraft, \$8.50 to \$9.50.
 Glazed Kraft, \$9.00 to \$10.00.
 Tissues, bleached, 90c to 1.50c.
 Tissues, bleached, 1.00c to 1.50c.
 Tissues, unbleached, 80c to 1.15c.
 Tissues, cap., 60c to 80c.
 Natural, greaseproof, 12c to 16c.
 Bleached greaseproof, 17c to 21c.
 Drug papers, whites and tints, 8c to 10c.
 Paper bags, Manila, 40 per cent. discount.
 Paper bags, kraft, 25 per cent. discount.
 Confectionery bags, 20 per cent. discount.

Pulp.

F.O.B. Mill.

Ground woodpulp \$22.00 to \$24.00
 Easy Bleaching Sulphite \$110.00 up
 Sulphite, news grade \$95.00 up
 Sulphite bleached) \$160.00 up
 Sulphate \$125.00 up

Paper Stock.

No. 1 hard shavings.....	\$3.65
No. 1 soft white shavings.....	\$3.15
No. 1 mixed shavings	70c
White blanks.....	\$1.15
Heavy ledger stock.....	\$2.25
No. 2 book stock	\$1.00
No. 1 book stock	\$1.50
No. 1 Manila envelope cuttings	\$1.75
No. 1 print Manilas.....	\$1.10
Folded news	70c
Over issues.....	70c
No. 1 clean mixed paper.....	65c
Old white cotton	\$5.00
Thirds and blue	\$3.00
No. 1 white shirt cuttings	\$7.25
Black overall cuttings	\$2.75
New light flannelettes	\$5.50
Ordinary satinets and flock	\$2.35
Tailor Rags	\$2.20

MONTREAL MARKETS.

The market for all lines of paper—news, book, writing, wrapping, etc., continues to exhibit firmness and strength. The same is true of chemical pulp. As a matter of fact, unusual firmness characterizes the demand for all kinds of sulphite. This demand is both from foreign and domestic sources and consumers are faced with the fact that there are insufficient stocks to meet their demand. The situation has been further aggravated by the refusal of Sweden to permit the export of chemical pulp to the United States unless guarantees are given that dealers in the neighboring Republic would not re-ship it back to England. As a result of this prohibition, England has to look to Canada very largely for her sulphite. Apparently there is no relief in sight in regard to easier market conditions or a more abundant supply. On the other hand, the tendency is steadily upward. Easy bleached sulphite is quoted at from \$110 up.

News in rolls is quoted at \$2.25 to \$2.40 at the mill in carload lots, either for the Toronto or Montreal market, while sheets in carload lots are quoted at from \$2.40 to \$2.50 at the mill. Small orders for rolls and sheets are quoted at proportionally higher prices. Ground wood pulp and unbleached sulphite are in brisk demand and prices undoubtedly will show an advance owing to the unprecedented call. Buyers who have been holding off hoping for a decline in the market have been disappointed up to the present time and are likely to be further disappointed, as there is nothing to indicate a decline. On the other hand, everything points to extreme firmness, both in ground wood pulp and sulphite pulp.

Quotations, f.o.b. Montreal, are as follows:—

Book—News—Writing and Posters.

Roll News, \$2.40 to \$2.50 per 100 pounds at mill for large orders; \$3.00 to \$3.50 for small orders.

Ream News, \$2.50 per 100 pounds at mill for large orders; \$3.50 to \$3.75 for small orders.

No. 1 Book, 7.50 to 8.25.

No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.

No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.

Writings, 6.95 to 10.

Writing Manila, 6.95.

Cover papers, 11 to 14½¢, according to colors wanted.

Colored Poster, 6½ to 7½¢.

An extra charge of 10¢ per 100 lbs. will be made when Book Papers are packed in frames, and 15¢ per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs..	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs...	3.40	3.65	3.90

NEW YORK MARKETS.

NEW YORK CITY, N. Y., August 25th.

The acute conditions in ground wood pulp continue. The grinders are still operating to their capacity to try and supply the paper mills, but average several months behind in taking care of orders. Were it not for the fact that the weather conditions have been favorable—there has been plenty of rain, considering the summer season—the industry would undoubtedly now be experiencing a due shortage of pulp. As it is, few mills are in a position to take orders. They are nearly all sold ahead for the rest of the year. There seem to be absolutely no prospects that the market will ease up to any extent for some time to come. The mills consuming ground wood pulp are still taxed to their capacity to get out their entire product for the trade. As the demand for newsprint and other papers in which ground wood forms a big factor is very great, there is no possibility that prices will drop. It must also be remembered that indications point to a very active fall, which means that the demand for pulp will be a continuous one for the rest of the year, at least. Present quotations are about \$21 to \$22½, f.o.b. pulp mill.

It seems pretty well assured that the sulphite market has not yet reached its highest point. Difficulties in getting stock have not in any way been lessened. In fact, it is a matter of serious consequence to try to get any large quantity of pulp, for imports continue very light and the prospects of replenishing supplies are not very bright. The Scandinavians are not showing much disposition to sell their stock in this country for they are selling their supplies to the Germans at figures which are known to be higher than even the outrageous prices being asked here. Strange to say, there has been no unusual demand for chemical pulps, despite the great demand for the paper and the fact that the mills are consuming as much stock as they can. From the domestic pulp mills, there is little to be had for they are practically all sold far ahead. Foreign bleached sulphite is quoted nominally at 8½ cent and up. Easy bleaching sulphite is very firm and hard to get,

holding at about 6½ cents. Domestic bleached sulphite holds to about 7 cents. Foreign unbleached is quoted about 5 to 5½ cents; domestic unbleached can be had in limited quantities at 4 cents.

Krafts are still in serious shape. The shortage of these pulps is very acute. The consumers are operating at full capacity. Practically the entire production for the rest of the year and more is all taken up. Within a few months there will undoubtedly be an increased production when a few new machines are started. However, in the meantime, there are little prospects that the market will get below 5½ to 5¾ cents.

While rags are moving, they are not characterized with any real amount of life. The mills claim to have considerable stock on hand and are not showing much interest in buying. From some quarters, reports are heard to the effect that roofing is picking up and that it has been sold as high as 2¾ cents. However, it is believed that this condition is not general. Dealers are still hopeful for the future, although it is rather problematical as to what course things will take. It is calculated that, with the mills operating at capacity, they must soon come into the market. Present conditions seem strange. Imports are almost inconsequential and domestic supplies are far from abundant—but these facts seem to have no bearing on the markets. New white shirt cuttings are quoted at 8½ to 9½ cents; washables, 6 to 7 cents; new blue cottons, 5¾ to 6½ cents; old whites, No. 1, 6 cents; house soiled whites, 4½ cents; street soiled whites, 3½ cents; thirds and blues, 3¾ and 4 cents; black stockings, 3½ and 4 cents.

Bagging seems to be acting in sympathy with rags, that is with regard to the demand. Consumers appear absolutely disinterested in stocks. However, there is a tendency among dealers to hold to a certain firmness. This is impelled by a belief that the market must strengthen because of the way in which the English embargo is being enforced. Gunny is holding to about 3 and 3½ cents; bright bagging is quoted at 3½ cents; sound bagging at 3 cents mixed bagging, at 2½ cents. Rope is not in demand, despite the shortage but dealers look for an active market. Quotations range at from 4½ to 5 cents.

The waste paper market is maintaining a fair degree of firmness, due largely to the fact that consumers of chemical pulps are resorting, as much as possible, to the use of waste papers. It is for this reason that soft white shavings are showing to good advantage. They are quoted at about 3¾ cents. Hard white shavings are holding to about 3¾ to 4¼ cents. Krafts are in fair demand at about 2¾ to 3 cents. Considerable activity has been reported in mixed papers which are quoted at 62½ cents. Strictly overissue are near 1 cent a pound, and are expected to go higher because of the fact that all of the publishers are eliminating the return privileges.

The paper market continues very firm, with the manufacturers operating their machines at capacity, endeavoring to produce enough paper to meet their obligations. However, the fact that this condition has already been existing for some time, seems to have made no difference. For the manufacturers actually report that they are not feeling any relief. Some of the jobbers state that the demand from the consumer has eased up considerably; but the order books of the mills are so well filled that if there is such an easing, it will be a long time before they will feel it. With the

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season for the fall business now in sight, it seems likely that there may be a fresh renewal of the rush which was experienced just a little while ago. In such an event, with the mills already flooded with business, it is difficult to predict what may happen.

News print manufacturers have not been able to offer any encouragement to the newspaper publishers, so far as a freer supply of paper is concerned. According to the mill men, despite the efforts on the part of the publishers to reduce consumption, the market remains just as firm as it has been during the past few months and conditions are just as acute as they were during the worst period. Very high prices have been paid for spot lots, some as high as 5¾ cents. There are no prospects for an immediate relief in this market. The Federal Trade Commission is still busily engaged investigating conditions in the news print field and has thus far been able to unearth no material evidence against the manufacturer.

In the other grades of papers conditions are almost identical—that is it is difficult to get supplies even at exorbitant prices. Wrappings are very firm, with only few of the mills able to take business at any price. Tissues are unusually acute for they are practically unobtainable. Book papers continue very strong. Some of the book mills are filled ahead as far as November and December and are offering no encouragement for a lowering of prices. In fact, notices were received from coating firms, during the past week, that further advances were to become effective soon. Boards are active and still inclining upward.—R. W. JOLLY.

THE TRUTH ABOUT ONTARIO'S FOREST PROTECTION SYSTEM.

(Concluded from page 297).

1915, 317 fires were reported by rangers patrolling just two railways—both government-owned and operated—the Transcontinental and the T. and N. O.

Is 300,000 Adequate?

Ontario spends over \$300,000 annually for forest patrol, including expenditures by the province and by limit-holders. Is this adequate?

The inadequacy is not in the amount expended, but in the thing it buys. Money can be wasted with as much facility in a forest as in a town. Ontario is not getting, by any means, all that it is paying for in the way of forest fire protection.

The best protected forest area in Eastern Canada is probably the 24,000 square miles in Quebec under the care of the St. Maurice and the Lower Ottawa Forest Protective Associations. These were organized by limit holders on business lines, with competent managers, and a plan whereby one inspector is assigned to about ten men.

Their patrol, including time and money spent on building lookout towers, trails, camp fire places, repairing telephone lines, etc., costs about a quarter of a cent per acre per year. Relatively speaking, the results are excellent, and justify a much heavier expenditure for a correspondingly more complete fire protection service. With the expenditure per acre

incurred in Ontario, practically complete protection from fire can be secured.

At a quarter of a cent per acre, the entire 10,000,000 acres said to be under license in Ontario could be patrolled for \$25,000 and patrolled about as thoroughly as the lands of the private associations in Quebec. The Ontario licensees now pay \$70,000 annually for a protective service that, frankly speaking, is not in the same class. The Quebec associations are far from full-grown, but they avoid at least the costly overlapping incident to the "every man for himself" plan to which the Ontario licensees are bound. Some of the Ontario licensees pay as high as \$5 per square mile for fire patrol per year. The highest assessment yet made against the members of the St. Maurice Forest Protective Association in Quebec is \$1.92 per square mile, but that low rate is obtained by unification of ranger control, the mapping of patrol districts on economical and proper lines, and improved methods of communication and transportation, through the construction of trails, telephone lines and lookout stations. In Ontario, however, every licensee shifts for himself. Co-ordination of patrol service is practically unknown, and the limit holder pays dearly for a small degree of protection, or sometimes fails to get it at all on account of the fire ranger being used primarily for other work. Apparently only in the parks and in some of the reserves has even a small beginning been made in the construction of trails, telephone lines and lookout stations. And yet this mechanical foundation is absolutely essential to any well-organized forest fire protection service. Surely the interests of the wood-using industries of present and future demand that the Ontario Government organize the licensed lands for patrol purposes. It does not seem an exaggeration to predict that if such action were taken, the amount of protection to the best timber in the province would be quadrupled, without a penny of additional cost to either licensee or taxpayer.

Thorough-going Action.

The situation in Ontario calls urgently for a complete re-organization of the whole fire-ranging system along modern and up-to-date lines, with adequate attention to the protection of unlicensed Crown lands as well as forest reserves and parks and lands under license. The Department of Lands and Forests of Ontario is entitled to the credit of having been the first governmental agency in Canada to recognize the necessity for an organized system of forest fire protection. In 1885, a beginning was made in the organization of a fire-ranging service on licensed lands, and in succeeding years this organization has been developed and extended. However, on the whole, the organization has not kept pace with modern developments in some of the other sections of Canada or in the United States. The lack is very largely one of organization and supervision, both in the head office and in the field. The amount of money now being expended is sufficient, if handled according to modern business standards of organization, to provide a very much better degree of fire protection than is now secured. H. R. MacMillan, Chief Forester of British Columbia, has stated that more money is wasted in fire protection today than is used economically, because of lack of field supervision. The fire protection situation in Ontario is an illustration of this undeniable fact.

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This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Acid Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Air Compressors:**
Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Barkers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
- Bearings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Beaters:**
Bertrams Ltd., Edinburgh, Scotland
Clafin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass
Marx & Co., J. London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Tippet, Arthur P. & Co., Montreal, Canada.
- Belting:**
Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.
- Belt Conveyors:**
The Jeffrey Mfg. Co., Columbus, Ohio.
- Bleaching Powders:**
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.
- Bleach Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
- Blowers:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.
- Boilers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Boilers—Water Tube:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Brass Wire Cloth, Fourdrinier Wires:**
Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Tippet, A. P. & Co., Montreal, Canada.
Westbye, P. F., Peterboro, Canada.
- Cable Conveyors:**
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Calendar Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn
- Carriers:**
Northern Crane Works, Walkerville, Ont.
- Cars, Dump and Flat**
Fraser, W., Montreal
Sessenwein Bros., Montreal
- Castings:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.
- Chain Crane:**
Northern Crane Works, Walkerville, Ont
- Chain Blocks:**
The Jeffrey Mfg. Co., Columbus, Ohio.
- Chain Conveyors:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chain Drives (Silent and Steel Roller):**
Jones and Glassco, St. Nicholas Building, Montreal.
- Change Speed Gears:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Chemicals, Colors, Etc.:**
Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chimneys:**
Canadian Kellogg Co. Ltd., New York.
- China Clay:**
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chippers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Disintegrators:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Coal and Ash Conveyors:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Condensers—Barometric:**
Canadian Kellogg Co. Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Conveying Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls:**
Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
- Couplings:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cranes:**
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Electric:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Cranes—Hand Power:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cranes—Overhead Travelling:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cut Gears:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Cylinders:**
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Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Covers:**
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
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- Cylinder Moulds:**
Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
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- Dandy Rolls:**
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- Digesters:**
Canadian Kellogg Co. Ltd., New York.
- Digester Lining:**
Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Dryers:**
Bertrams, Ltd., Edinburgh, Scotland.
- Engines:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Evaporators:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
- Exhausters:**
The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery:**
Process Engineers, Ltd., Montreal, Canada.
- Exporters:**
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Ayers, Ltd., Lachute Mills, Que.
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Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Montreal, Que.

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Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
- Fricion Holsts:**
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Gauges:**
Darling Bros., Montreal, P. Q.
- Gears:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Grate Bars:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Grinders:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Hangers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Hand Power:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Heaters:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Helicoid Conveyor:**
H. W. Caldwell & Son Co., Chicago.
- Holsts:**
Darling Bros., Montreal, P. Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.
- Iron Castings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Iron Pulleys:**
H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Jordan Engines:**
Jones, E. D. & Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
- Knives:**
Crookes, Roberts & Co., Sheffield, Eng.
Disston, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hay, Peter, Knife Co., Galt, Ont.
Tippet, A. P. & Co., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Knives, Paper Cutting:**
Galt Knife Co., Ltd., Galt, Ont.
- Kollergangs:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Locomotives:**
Montreal Locomotive Works, Ltd., Montreal.
- Locomotives, Re-built**
Sessenwein Bros., Montreal
Fraser, W., Montreal
- Paints:**
Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.
- Paper Stock, Etc.:**
Pullan, E., 490 Adelaide Street W., Toronto, Canada
- Paper and Pulp Machinery:**
Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Downingtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P. Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmsley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. F., Peterboro, Canada.
- Paper Tester:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. Elias Wilkinson, Toronto, Ont.
- Penstocks:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Pillow Blocks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Piping— High Pressure:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Hydraulic:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Power Plant:**
Canadian Kellogg Co. Ltd. New York.
- Piping— Welded:**
Canadian Kellogg Co. Ltd., New York
- Pneumatic Thickeners:**
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
- Presses:**
Boving Hydraulic & Engineering Co., Limited, Lindsay Ont.
Can. Boomer & Boschert Press Co., Montreal, Canada.
- Press Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulleys:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Pulp Stones:**
Lombard & Co., Boston, Mass.
Stancliffe Estates Co., Ltd., Darley Dale, England.
- Pumps:**
Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P. Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Radial Brick:**
Canadian Kellogg Co. Ltd., New York.
- Railway Equipment—Scrap**
Sessenwein Bros., Montreal
- Rails—re-laying:**
Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal.
- Refiners:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Reinforced Concrete:**
Canadian Kellogg Co. Ltd., New York.
- Rope, Cotton and Manila:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Rope Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Rosin Size:**
Paper Makers Chemical Co., Easton, Pa
Process Engineers, Ltd., Montreal, Canada
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada
- Rosin Size Boilers and Dissolvers:**
Process Engineers, Ltd., Montreal, Canada
- Rotary Sulphur Furnaces:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Safes:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Save-Alls:**
Sherbrooke Machine Co., Ltd., Sherbrooke, Que
Waterous Engine Works Co., Ltd., Brantford, Canada
- Screen Plates:**
Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.
- Screens:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Tippet, Arthur P. & Co., Montreal, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. F., Peterboro, Canada.
- Shafting:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Shredders:**
The Jeffrey Mfg. Co., Columbus, Ohio
- Slitters and Re-Winders:**
Bertrams, Ltd., Edinburgh, Scotland
Cameron Machine Co., Brooklyn, N.Y
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Smoke Stacks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

MILL SUPPLIES--Continued

- Soluble Blue:**
Brandram-Henderson Ltd., Montreal.
- Spiral Conveyor:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Split Pulleys—Wood and Steel:**
The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Sprockets:**
The Jeffrey Mfg. Co., Columbus, Ohio.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Stacks:**
Canadian Kellogg Co. Ltd., New York.
- Steam Appliances:**
Darling Bros., Montreal, Que.
- Steam Regulator:**
Pickles, W. F., Buckland, Conn.
- Steel Barrels:**
The Smart-Turner Machine Co., Hamilton, Ont.
- Steel Drums:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Smart-Turner Machine Co., Hamilton, Ont.
- Stokers—Mechanical:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Penman, Ltd., St. Hyacinthe, Canada.
Porritt, Joseph & Sons, Manchester, England.
Spencer, J. H. & Sons, Bury, England.
Tippett, Arthur P. & Co., Montreal, Canada.
- Strainers—Water:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Straw Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Straw Dusters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Strawboard Making Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
- Structural Steel Works:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Stuff Chests:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Suction Couch:**
Process Engineers, Ltd., Montreal, Canada.
- Sulphite Mill Equipment:**
Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Sulphate Mill Equipment:**
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Sulphur:**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners:**
Advance Engineering Co. Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
- Stebbins Engineering and Manufacturing Co., Watertown, N.Y.**
Waterous Engine Works Co., Ltd., Brantford, Ont.
- Superheaters—Steam:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Tanks:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Tanks—Welded:**
Canadian Kellogg Co. Ltd., New York.
- Transmission Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones & Glassco, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Transmission Rope:**
Jones & Glassco, Co., Montreal, P. Que.
The Waterous Engine Works Co., Limited Brantford, Ont
- Travelling Cranes:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.
- Trolleys:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Tube Cleaners:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Turbines:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurtemberg, Germany
- Valts and Valt Doors:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Water Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smith, S. Morgan Co., York, Pa.
- Wire Cloth for Paper Machines:**
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Tippet, Arthur P. & Co., Montreal, Canada.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont
- Waste:**
Hough, R., London, England.
- Wet Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R., Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- News Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.
- Wilson, J. C., Ltd., Montreal, Que.

Kraft:

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Bathurst Lumber Co., Limited, Bathurst, N.B.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Riordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,

September 2, 1915.

PAPER MILLS---Continued

Bristle:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex. & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
(See also Kraft).

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex. & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue
John Martin Paper Co., Ltd.
Teese & Persse, of Alberta, Limited.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Teese & Persse, of Alberta, Limited.

VANCOUVER, B.C.:

Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

H. G. Smith, Ltd.
Tees & Persse

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104 1/2 Windsor.
Alien, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge Paper Co Ltd.....	60
Beveridge, Jas., Chatham, N. B.....	
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6
Bowater, W. V. & Sons, Ltd.....	48
Brandram-Henderson Ltd.....	41
The Bronson Company.....	

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	3
Canadian Fairbanks-Morse Co., Ltd.....	61
Canadian Kellogg Company.....	7
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	13
Capital Wire Cloth Mfg. Co., Ltd.....	60
Carthage Machine Co.....	
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	62
Christie George, Ltd.....	
Churchill & Sim.....	62
Claffin Engineering Co.....	48
Crookes, Roberts & Co.....	13
Crossley, T. L.....	65

D

Darling Bros, Ltd.....	
DeCew, J. A.....	64
Dean & Son.....	8
Disston, H. & Sons, Ltd.....	6
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
Ferguson, H. S.....	64
J. Ford & Company.....	62
Fraser, W.....	65

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	65
Glens Falls Machine Works.....	6
Goldie and McCulloch Co., Limited.....	49

Groot, H. de

H

Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	62
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	14
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K

Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Mackinnon, Holmes & Co.....	60
Main Belting Co. of Canada Ltd.....	
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15

N

Noble & Wood Machine Co.....	10
Northern Crane Works, Ltd.....	62
Norwood Engineering Co. of Can. Ltd.....	61

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester I nining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	62

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	8

S

Sadler and Haworth.....	50
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jas. W.....	65
Scott, Ernest & Co.....	
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spencer, J. H. & Sons.....	13
Spielmann Agencies.....	65
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	
Ticonderoga Machine Works.....	
Tippet, Arthur P. & Co.....	13

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	60
Voith, J. M.....	12

W

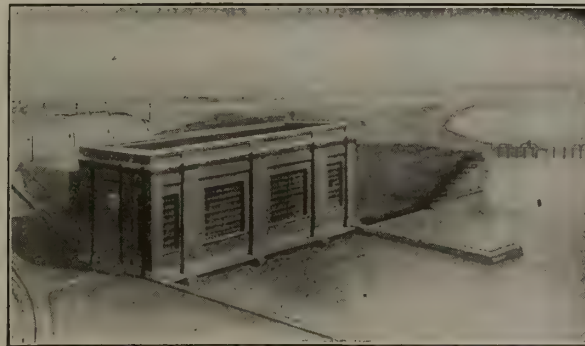
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	62



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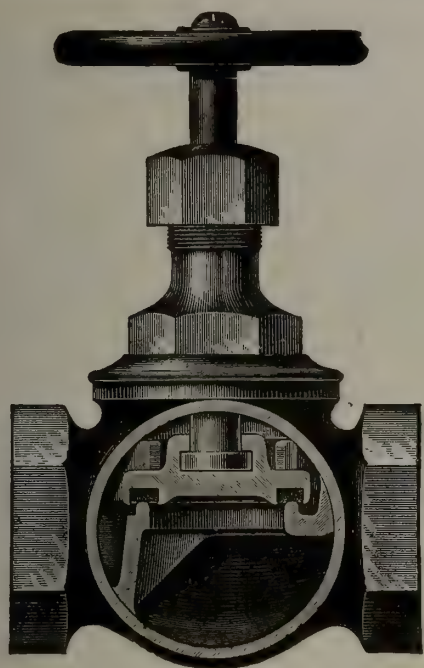
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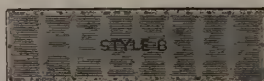
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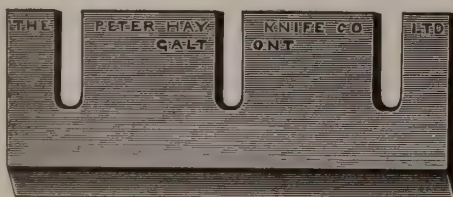
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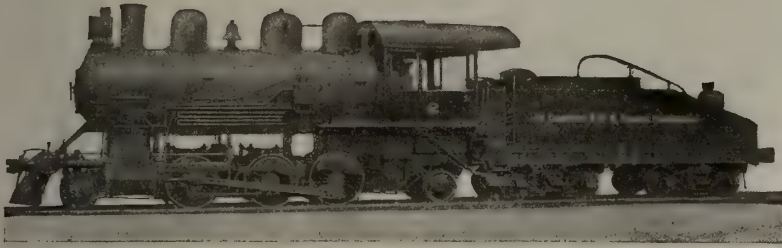
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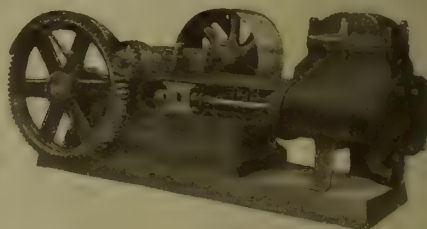


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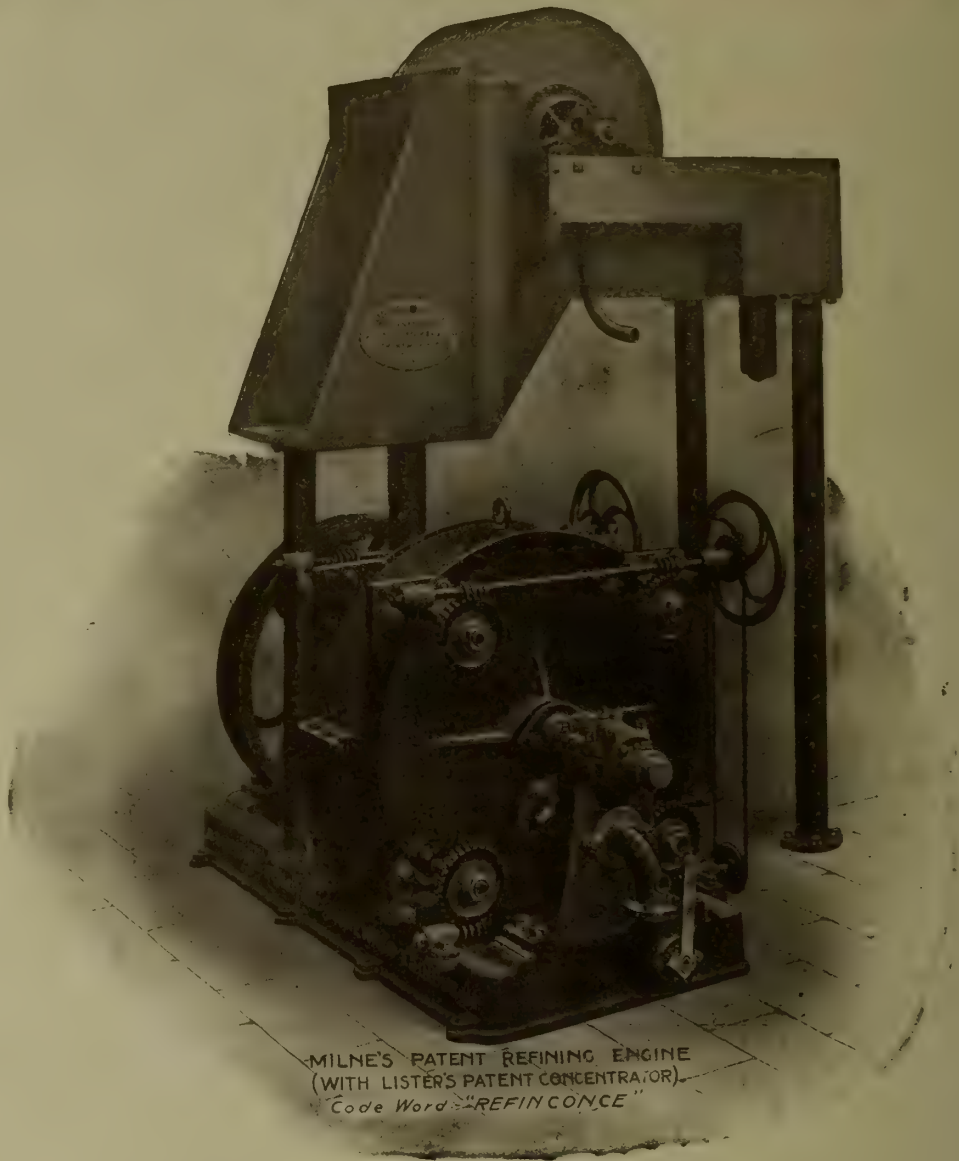
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

Bertrams Limited

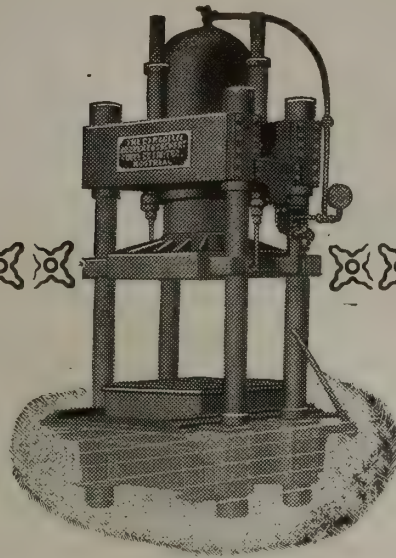


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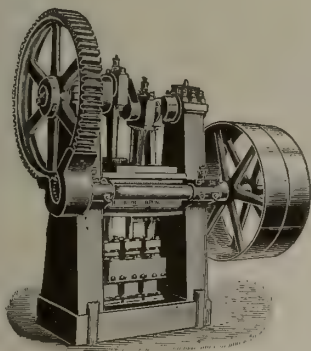
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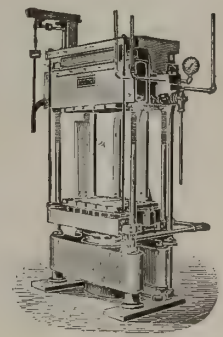


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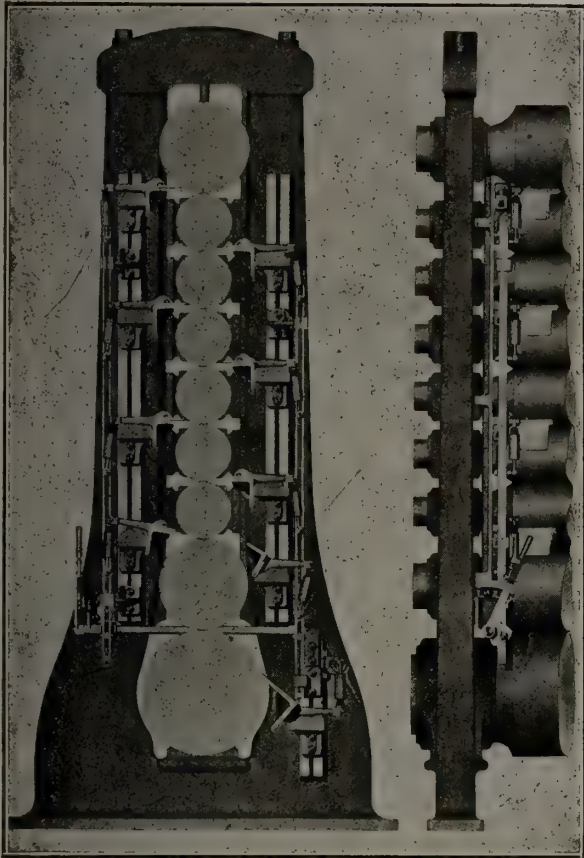
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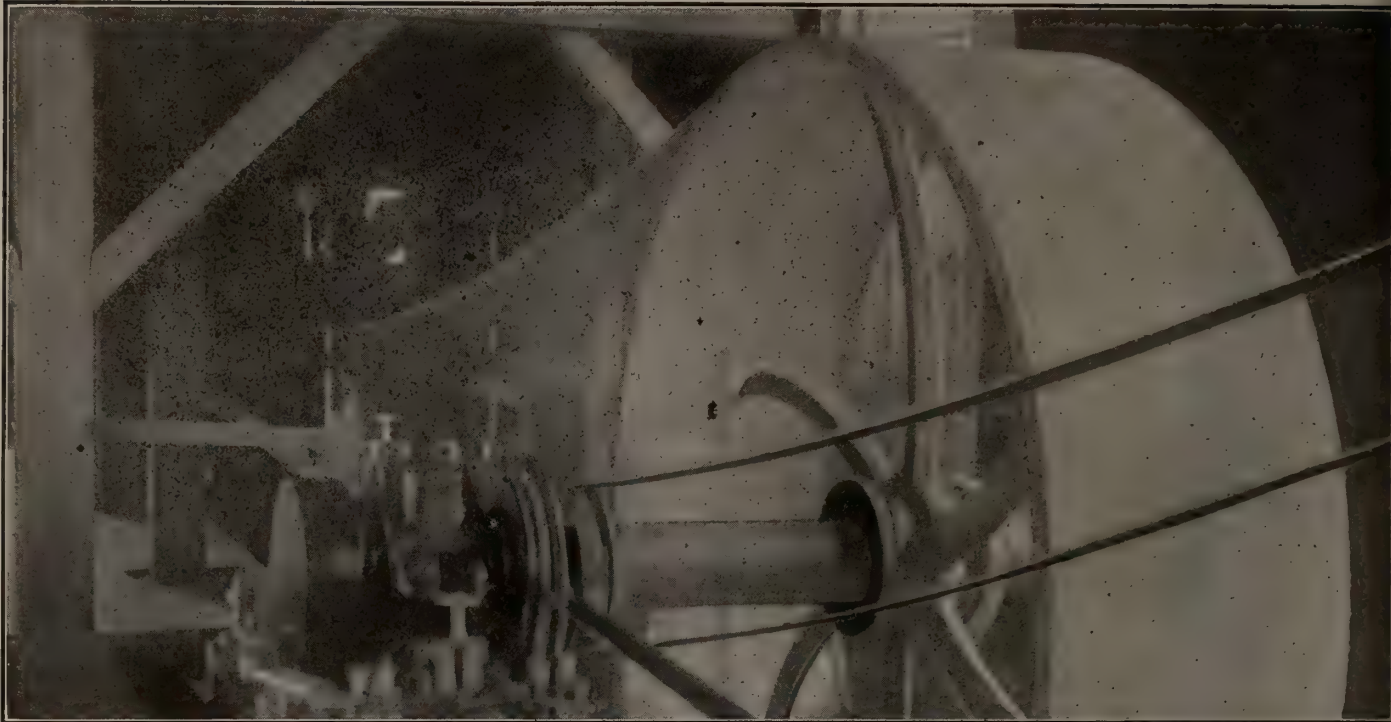
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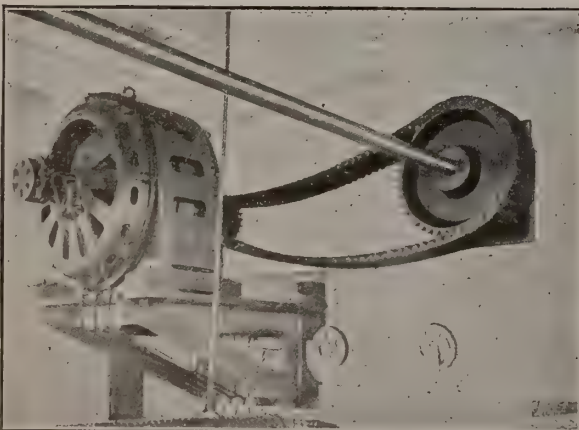
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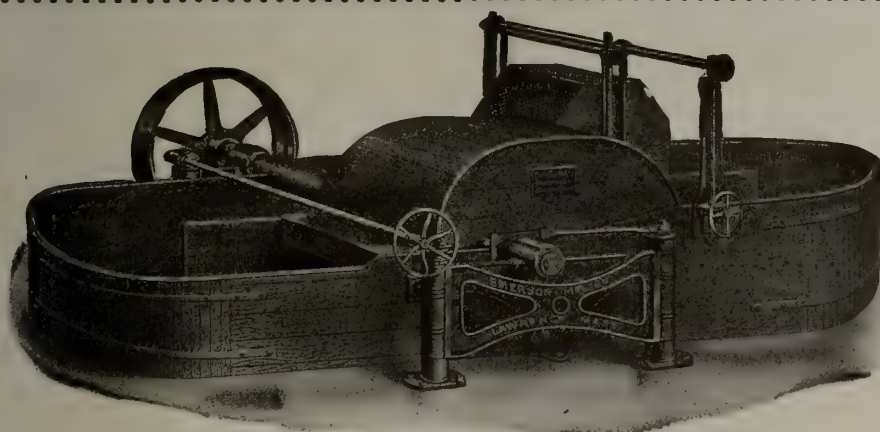
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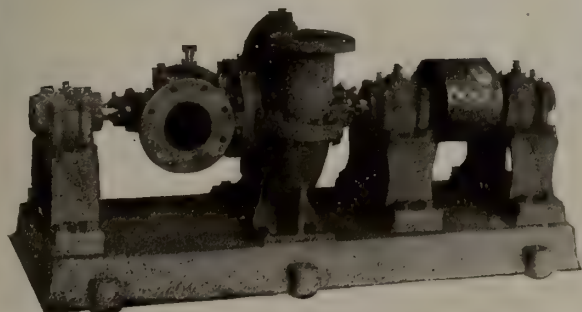
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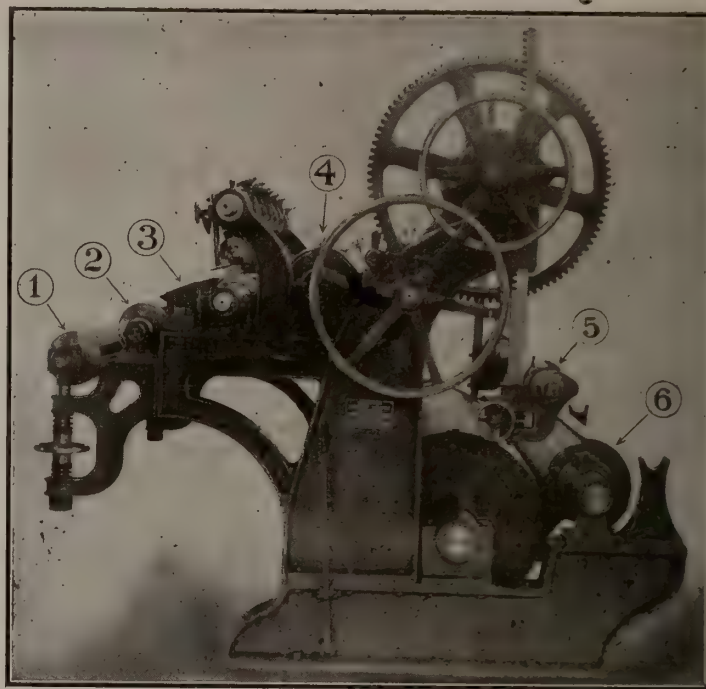
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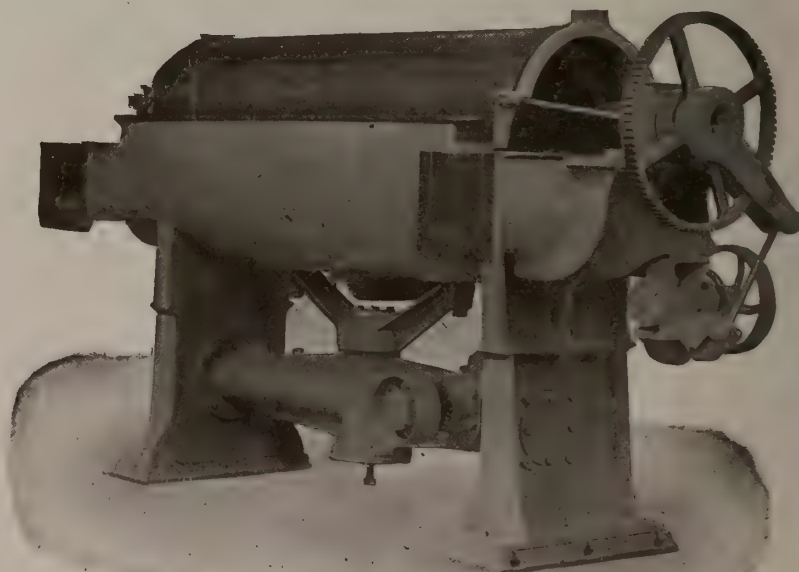
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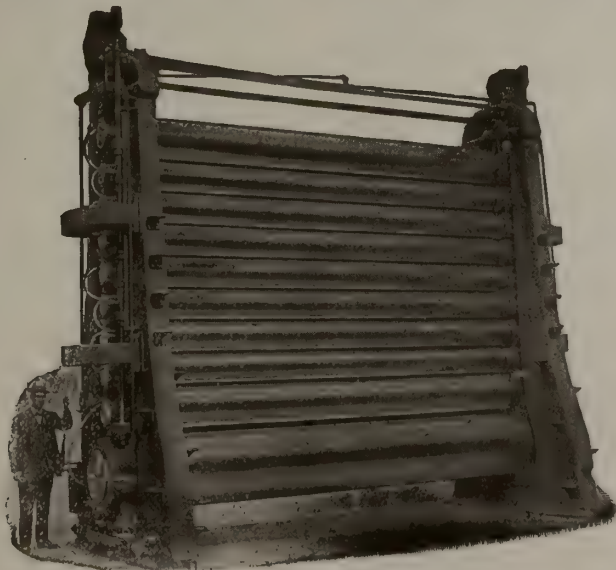
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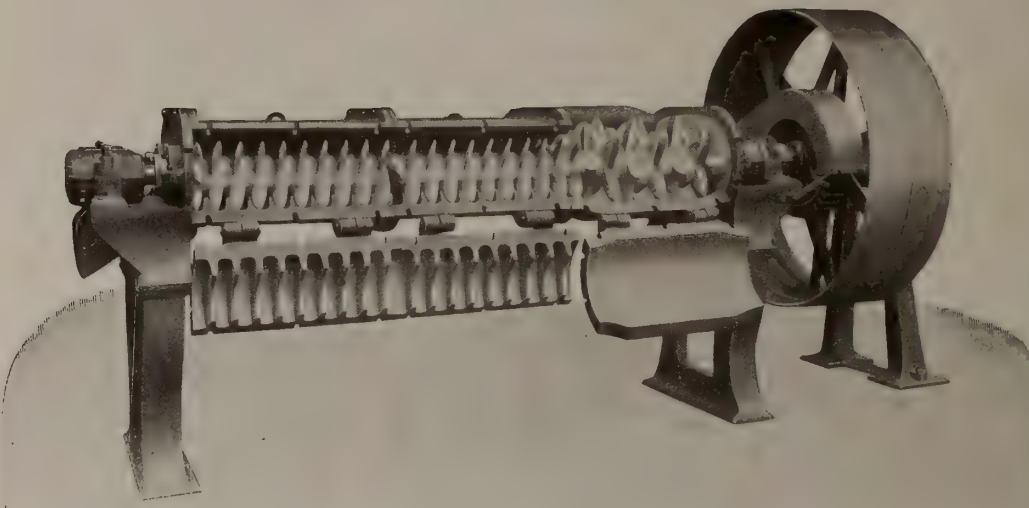
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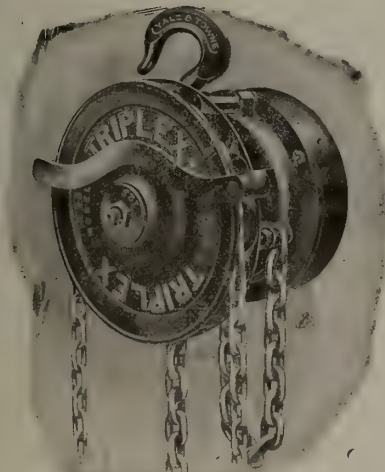
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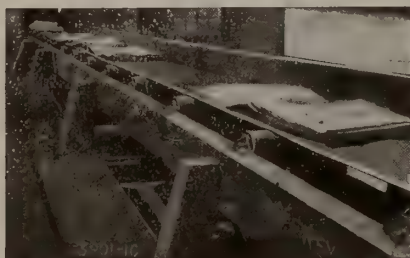
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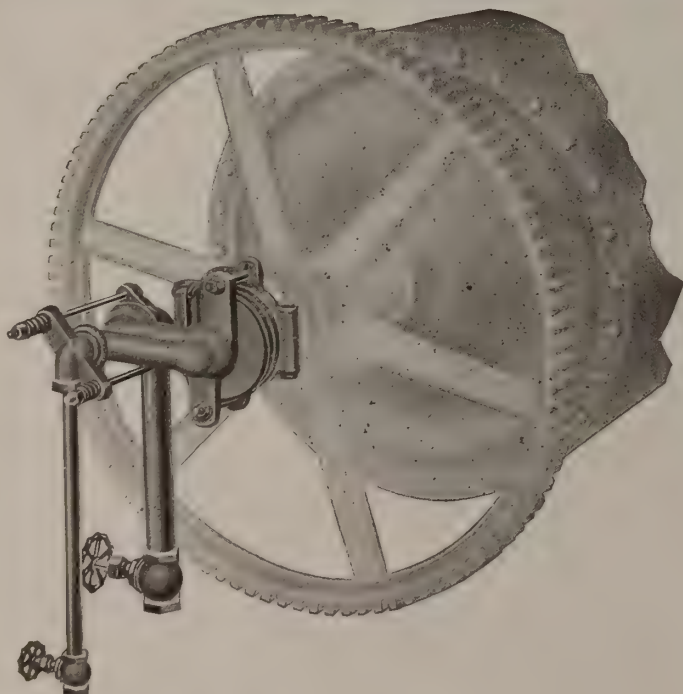
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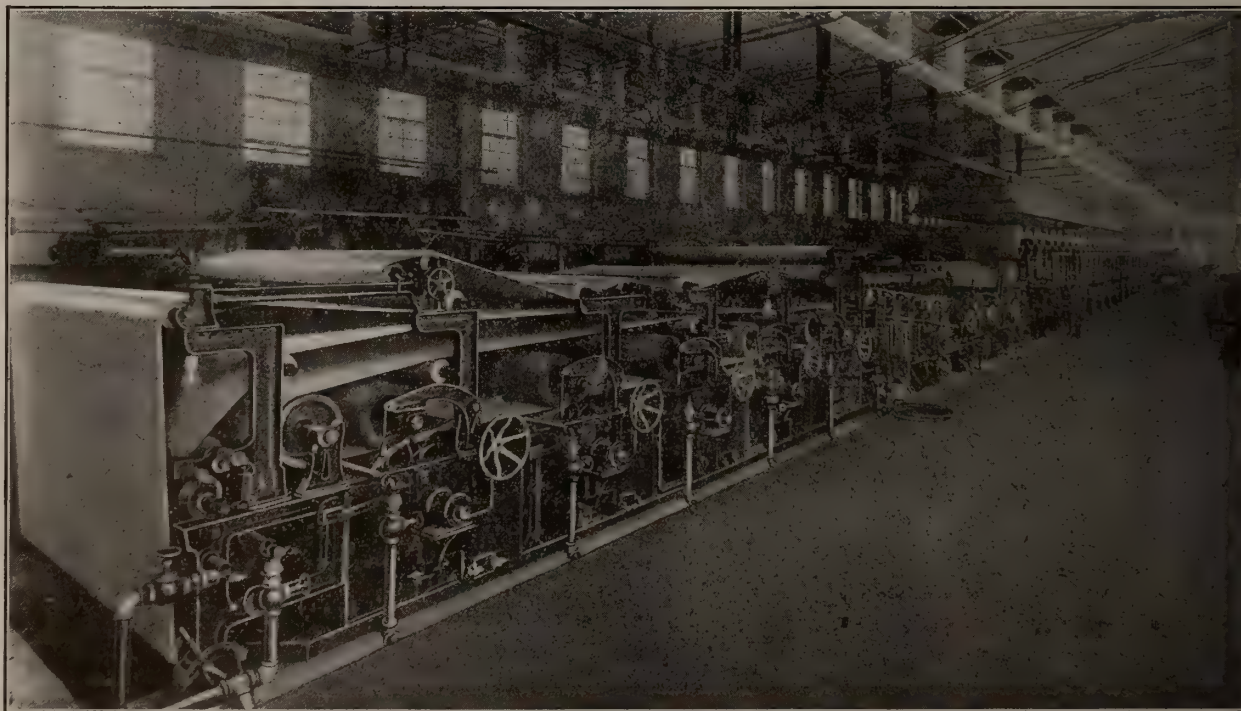
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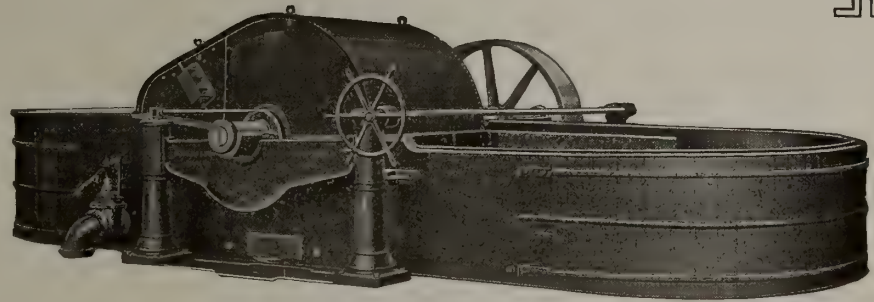
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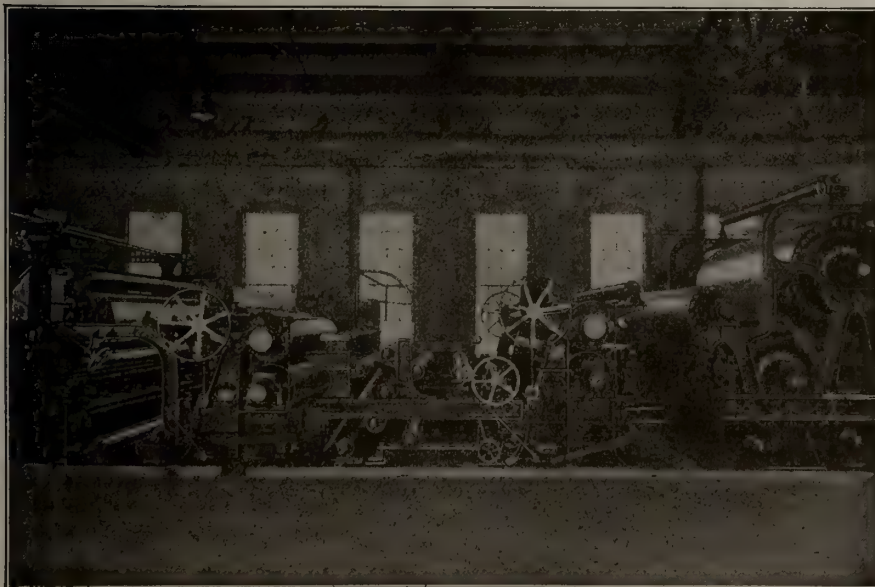
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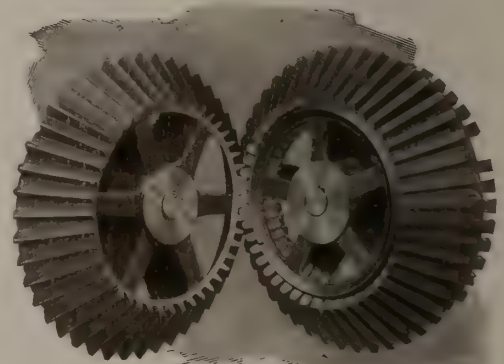
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Single Copies 20c.

VOL. XIII.

MONTREAL, SEPTEMBER 15, 1916

No. 18

The Chemical Meeting in New York

Canadian pulp and paper men would do well to attend the 53rd Annual Meeting of the American Chemical Society which is to be held in New York City September 25th-30th inclusive. In connection with this meeting the Technical Association of the Pulp and Paper industry holds a series of conferences at which most interesting papers will be read by the leading paper chemists in the United States and Canada. It is expected that 3,000 delegates will attend the various meetings of the Technical Society and the gathering should result in giving a big impetus to technical research on this Continent.

Possibly at no time in the history of this country has the work of the chemist been so important as it is at the present time. The world now recognizes that Germany's wonderful industrial expansion came largely as a result of the attention they placed on chemical research and on technical education, and Germany's commanding position in regard to aniline dyes and other matters are traceable to these two causes. To-day Germany is hemmed in and the industrial world outside is dependant upon its own resources. This is an opportunity for Canadian and American chemists and manufacturers to arrest from Germany some of the world's trade which they possessed prior to the outbreak of hostilities.

To-day the chemist is playing an increasingly large part in commerce and industry. In the olden days it was only the trunk of a tree, the carcase of a hog or the oil from a well that was utilized, while the hundred and one by-products were allowed to go to waste. To-

day the by-products are found more important than what was originally regarded as the main product. The modern chemist has eliminated waste and made possible big dividends for shareholders. At a time when there is a desire for thrift on the part of the people of the British Empire it is most timely that every possible encouragement should be given to our chemists in order that they may utilize to the fullest possible degree the resources of the nation. The conservation of our resources takes on a new and fuller meaning in the light of chemical research.

The Export Field

The importance of an export trade in paper has been so impressed upon manufacturers in Canada that a number of the leading paper makers in the Dominion have organized the Canadian Export Paper Company, Limited, with a capital of \$500,000. Mention of this was made in the last issue of the Pulp and Paper Magazine but fuller details are now available.

The principal purpose of the company is outlined in the following clauses of the charter:

(a) To import, export, manufacture, buy, sell and deal in paper of all kinds and to act as agent for manufacturers of and dealers in paper, pulp, pulpwood and all other ingredients used in connection with the manufacture of paper and the products thereof;

(b) To investigate commercial conditions in connection with the paper industry in foreign countries and elsewhere and to collect and circulate statistics and other information relating thereto and to circulate and otherwise utilize such information;

(c) to procure information for customers and others having dealings with the company as to the standing and responsibility of the parties with whom they propose to transact business;

(d) To act as the agent and representative of paper producers and others in connection with their business in foreign countries, either directly or through the medium of others, and to act jointly as commission agents and brokers for the purchase or sale of paper of all kinds and the products thereof for and on behalf of such producers, or to engage in such purchases or sales as principals.

Canada has modern mills equipped for the most part with the latest and best in machinery, has abundance of water power, the raw material, labor and technical skill—in other words every facility for the economical production of paper. It is therefore time that she was going after foreign markets. In the last week of August there was shipped from the port of New York, \$567,000 worth of paper to thirty-seven different countries. For the year ended June 30th, 1916, the United States exported 73,500,000 pounds of book paper. Canada's exports of this were negligible. Our chief export is in newsprint but with our expanding production we ought to do much better even in this. Doubtless the newly organized Export Paper Company, will do much to foster foreign trade.

A Government Operated Mill

The United States Government has decided to go into paper making business. The Government feels that they have not had trouble enough with Mexico, Germany, railroad strikes and "fifty-seven other varieties" of foreign and domestic complications so want to add to their worries. According to the sage Senator who has introduced the measure this government owned and operated paper mill is to be the panacea for all the ills the country is heir to.

As a matter of fact it will add to the nation's troubles. The history of Government ownership in the United States and Canada is not conducive to further experiments in that line. Government-owned railroads never accumulate anything but deficits and political parasites while other business matters managed by governments usually end in failure.

A paper mill operated by the United States Government would be a source of expense and a new field for graft. That Government like our own has not such a creditable record that it can afford to take up a highly complicated business like paper making and hope to make a success of it. The effort to build such a mill is further evidence of paternalism having run riot in the neighboring Republic.

Doing it up "Brown."

The Postmaster General has decided to change the color of our stamps and hereafter that curiously compounded three cent stamp will appear in a plain brown dress, while the two cent stamp will remain red and the one cent green as heretofore. The reason given for the change is that the public continued to confuse the two cent stamp with the three owing to both being red.

In reality we cannot understand anyone confusing our three cent stamp with anything on earth. Its the most curious combination of numerals we have ever seen put together. Its a makeshift and looks the part. It is not a two cent stamp because there is a large 1 and T. C. shining forth above the lower sign which states plainly "two cents." It is not a one cent stamp although the figure 1 might lead one to believe that such was the case. It is meant for three although we are not told to add the two and the one. The stamp is a sort of correspondence school lesson in higher mathematics, so the Canadian people and the strangers within our gates have been able to learn something of Arithmetic and geometrical progression, a bit about lograthims, trigonometry, calculus and Algebra, to say nothing about addition, subtraction and multiplication. And now an all-wise Government is to spoil all we have learned about numerical combinations and their relation to red by making the stamp brown. It would have been far better and more business like to have come out frankly and labelled the three cent stamp "Three Cents." We have to pay three cents for it so why try to disguise the fact behind the excuse that it is a two cent stamp with a one cent war tax added. That stamp of ours has occasioned much amusement—and much profanity—and the end is not yet.

BOND INTEREST TO BE PAID.

It is expected that the Lake Superior Paper Company, one of the Spanish River group of mills, will resume its bond interest payments this month. This calls for the payment of \$150,000. As regards the bonds of the Spanish River Company itself, according to existing arrangements between the company and the bondholders, the interest payments are to be resumed on January 1, 1917. The general understanding is that current profits will make such resumption easily possible on the part of the company.

NEW BRITISH COLUMBIA PULP CO.

The Empire Paper and Pulp Mills, Limited, a newly organized concern with \$2,500,000 capital and head office at Vancouver has been formed to take over the interests of the Swanson Bay Forests, Wood Pulp and Lumber Mills, Limited, near Ocean Falls.

The proposal of the new company is to take over the whole of the assets and undertakings of the old Swanson Bay Company (with the exception of certain

lands in Prince Rupert) and to carry on the business of pulp, paper, timber and lumber manufacturers and merchants, saw mill proprietors and pulp timber growers in all its branches. It is understood that the people back of the new organization are largely the interests who control the British Columbia Sulphite Fiber Company, who have large mills at Mill Creek, on Howe Sound, and who have also commenced preparations for the construction of big pulp and paper mills at Quatsino, on Vancouver Island.

The Swanson Bay mills were constructed about eleven years ago, J. M. MacKinnon, for many years

prominent in Vancouver business circles, being chief among the promoters of the business. It operated with varying success until the end of 1908, when the plant and timber holdings were sold out to an English syndicate who organized the Swanson Bay Forests, Wood Pulp and Lumber Mills Company, Limited. This organization continued operation until about the end of 1911, but it is said lost heavily on the operation. The mills have been closed ever since.

The timber holdings of the company are said to be among the most valuable in the province from a pulp mill standpoint.

Use of Mineral Fillers on High Speed "News" Machine

By "SNOWSHOE", Shawinigan Falls.

Mineral fillers or loading materials are put into paper for a variety of reasons namely:—

(1) To improve the "finish" or surface; (2) To increase the opacity of the sheet; (3) To bring up the weight of the sheet and to cheapen production for weight.

As it is well known the conditions under which a sheet of modern "News" travels over the wet end of a machine particularly, are considerably different to the conditions affecting the production of a sheet of "Book" paper for material. When the sheet or web gets onto the dry end, conditions become much the same in both cases.

In the case of "News" we have (1) very high rate of speed; (2) Thin stock flowing on to wire; (3) Minimum hydration of stock giving freedom from "wetness"; (4) Long extent of wire to travel, etc.

In the case of good class "Book" papers we would have — slower speed, thicker stock, much greater hydration of stock, shorter wire, etc.

These varying conditions have a great effect on the retention of fillers in the sheets.

The ingredients comprising the "stock" and the treatment the stock undergoes in the beaters and refiners has a greater effect also in the retention of loading.

Under the modern conditions of making "news" a high retention is not very possible, particularly at the present time, when a minimum of papermakers chemicals that can be used are used.

The two chief factors affecting the retention outside the actual making of the sheet are (1) presence of absence of sizing materials—chiefly Rosin size.

(2) Actual condition of fibres, whether produced in process of manufacture or by treatment in the beater.

As many mills at the present time are using no Rosin whatever in their paper and a minimum quantity of alum, the conditions for high retention of fibre are bad.

There is very little actual fibre treatment in beaters or mixers in modern "news" mills so that again conditions are against high retention as little or no hydration or tearing of the fibres into fibrillial takes place.

In the case of higher class papers of good weight, conditions are much more favourable for good retention, as Rosin size or other sizing material is used up

to a considerable percentage or more or less drastic treatment in beaters takes place with consequent hydration and tearing of fibres into fibrillial. These three Size Hydration and Fibrillial, hold the particles of filler into the sheet of "Book" while the sheet of "News" having none of these, readily parts with its filler.

Considering these two cases it appears probable that within limits, a coarser filler could be used with the "Book" than with the "News" as the latter has practically no means of holding to it the larger average particles, for it is evident that the size of particle of filler must be considered along with the average size or diameter of fibre of wood or cellulose and to obtain extent with the thickness of the sheet.

If we take the average diameter or thickness of a sheet of "news" we get 1-10 millimetre or say 1-250 part of an inch in the average diameter of the average fibre as .032m.m. that is three fibres=thickness of sheet, we get a good base from which to consider the whole question of filling materials for newspaper.

Clay or ground Tale appear to be the only materials used, at least to any extent in the filling of "news". Clays as bought in the open market are by no means identical as to colour, weight and general suitability and there is a wide difference between clays and ground Tales, particularly as to fineness of particle. In colour the Tales are all of a fine white and are supposed to give a superior finish to paper loaded with the material. The writer has had no practical experience of the use of ground talc on the paper machine but has always understood that this material when given a trial, caused trouble, by making dust or fluff on the surface of the paper and filling up the fine lines of process cuts. This result is evidently due to the large percentage of particles present in all commercial samples of ground Tale which are relatively large as compared with the average clay particle or average diameter of fibre.

Below are given a series of figures gathered together by the writer over a space of about three years and which give a fair idea of clays and tales as generally met with.

The quantity of grit was arrived at by elutuation test under a 9 inch head of water and the coarse residue rapidly sketched under the microscope to scale and measured.

The figures are not supposed to be strictly accurate but are fair approximations.

TABLE A. GROUND TALCS.

Description.	Percentage of Large particles %	Average Diameter of fibres	Average Diameter of Grit	Grit Times width of average fibre
District A. Ontario	40.0	.032 m.m.	.0750 m.m.	2.34
Boston "A."	29.0	"	.0675 "	1.95
" "O"	32.7	"	.0575 "	1.80
District "B" Ontario	14.9	"	.0575 "	1.80
Rochester Vermont	27.7	"	.0600 "	1.87
District B Ontario	7.1	"	.0575 "	1.80
" B "	25.0	"	.0600 "	1.88
" B "	32.7 (4" head)	"	.0550 "	1.72
Burlington Vermont	27.0	"	.0460 "	1.44
District "A" Ontario	45.8 (4" head)	"	.0725 "	2.27
	28.2	.032 m.m.	.0608 m.m.	1.88

TABLE B CORNISH CLAYS.

Description.	Percentage of Sand & Mica %	Average Diameter of fibres	Average Diameter of coarse particles	Sand & Mica Times width of average fibre
St. Anstell	2.00	.032 m.m.	.0400 m.m.	1.25
Fowey N.G.	7.75	"	.0320 "	1.00
" B.B.	3.40	"	.0280 "	0.87
St. Anstell	1.90	"	.0775 "	2.42
H.D.B.	1.15	"	.0490 "	1.54
G.M. Low Grade	11.20	"	.0420 "	1.32
A.	1.65	"	.0550 "	1.72
P.	2.00	"	.0750 "	2.34
S.W.	8.10	"	.0775 "	2.42
S.C. 2	19.40	"	.0625 "	1.95
B.W.	3.25	"	.0625 "	1.95
S.B.B.	9.90	"	.0625 "	1.95
W.H.	3.80	"	.0525 "	1.64
P.F.	6.80	"	.0625 "	1.95
X.M.	22.80	"	.0485 "	1.53
	7.00%	.032 m.m.	.0550 m.m.	1.72

TABLE C. Canadian Clays.

Canadian Clay	1.60%	.032 m.m.	.0625 m.m.	1.95
" Book Clay	1.35	.032 "	.0550 "	1.72
" Clay	1.04(4" head)	.032 "	.0250 "	0.78
	1.33%	.032 m.m.	.0475 m.m.	1.48

TABLE D. U.S. CLAYS.

Description.	Percentage of Grit %	Average Diameter of fibres	Average Diameter of coarse particles	Grit Times width of average fibre
1. Talc clay N.Y. State	20.80	.032 m.m.	.0410 m.m.	1.28
2. " " "	12.15	"	.0525 "	1.64
3. " " "	16.15	"	.0300 "	0.94
4. " " "	15.65 (4" head)	"	.0425 "	1.33
	16.20	.032 m.m.	.0415 m.m.	1.30

2. Talclay on 200 mesh seive	8.45	.032 m.m.	.1300 m.m.	4.06
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TABLE E.

	%			
1. Pennsylvania Clay	1.80	.032 m.m.	.0625 m.m	1.95
2. " "	1.80	"	.0550 "	1.72
3. " "	1.25 (4" head)	"	.0450 "	1.40
4. " "	0.78	"	.0575 "	1.80
5. " "	0.38	"	.0675 "	2.11
	1.20%	.032 m.m.	.0575 m.m.	1.80

TABLE F

SOUTHERN CLAYS.

	%			
1. South Carolina E.W.	1.00	.032 m.m.	.0475 m.m.	1.48
2. " clay	8.25	"	.0525 "	1.64
3. " K.L.M.	2.30	"	.0475 "	1.48
4. " K.L.M.	8.00	"	.0345 "	1.08
5. " clay	10.90	"	.1045 "	3.28
6. " clay	20.30	"	.0800 "	2.50
	8.46%	.032 m.m.	.0610 m.m.	1.91

TABLE G.

	%			
1 Georgia clay	8.45	.032 m.m.	.1300 m.m.	4.06
South Carolina \$1	10.50	"	.0450 "	1.46
" " \$2	12.70	"	.1600 "	5.00
2. Georgia clay	8.40 (4" head)	"	.0350 "	1.10
3. " "	5.25	"	.0240 "	0.75
	9.06%	.032 m.m.	.0788 m.m.	2.46

Table A gives 10 samples of ground talc from five different sources. The percentage of grit and average size of large particles is rather uniform throughout, but the amount of grit averages very high and it may safely be said that 28 per cent is useless and even harmful material.

Table B. gives 15 samples of Cornish clays, showing how commercial samples vary in fineness.

Comparing Tables A and B, it might appear at first sight, that the talc is not so greatly inferior to the clay, but it must be remembered that the 93 per cent of fine clay is composed of very much smaller particles than the 72 per cent of fine talc, so that the aggregate result as to fineness is highly in favour of the clays.

Table C shows three samples of Canadian Clays. These clays are of a fine white tint and are very free from grit. This grit appears to consist wholly of quartz with no mica probably showing that these clays are derived from non-micaceous felspathic rocks.

Table D. gives four samples of so-called "Talclay" from New York state; it appears to be a sort of compromise between Talc and China Clay and possesses some of the properties of both bodies. It is of a first class white colour, but the percentage of grit is too high.

Table E shows five samples from one manufacturer in Pennsylvania. These clays are very good for filling the cheaper grades of white paper, as the colour is good the samples are very free from grit and they "bulk" very well, and retain quite distinctly better in the sheet than most china clays.

Table F gives six samples from a firm in South Carolina; these clays were brown in tint due to Iron Oxide and were poorly prepared for the market as shown by the great variation in grit contents.

Table G shows five samples from firms in S. Carolina and Georgia. In two of the samples the grit approaches the size of small stones.

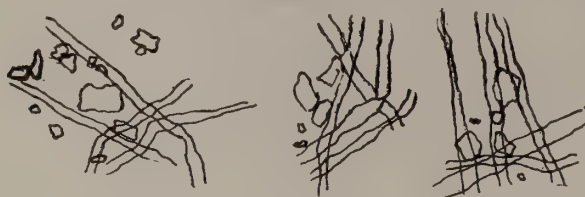
All these southern clays were more or less brown in tint and showed little evidence of any preparation for the papermaking market.

Table D shows a case where in addition to an elutriation test, the clay was passed through a 200 mesh sieve. It is fairly evident in comparing these figures, that a sieve test is quite inadequate for a "fineness" test on papermakers' clays.

When we consider that the width of the mesh or open space between the wires is about 0.08m.m., the sieve will let through as "fine" stuff all particles below this size (.08m.m.) and it would be possible to have a powder whose average particle was twice the diameter of the average fibre and still go entirely through the 200 mesh sieve. Bearing in mind that the fibres average about .032m.m. in width or thickness and the "news" sheet about 0.10m.m., such a powder would be a hopeless material to use.

The above sketches illustrate the relation of size of particle to thickness of fibre. The sketches were made to scale under a magnification of about 70 diameters and illustrate ground wood and sulphite fibres plus ground talc. The Talc was a mixture of sixteen different samples from various makers, which, as shown

in Table A contained about 28 per cent of coarse particles and it is these coarse particles which are shown in the sketch the finer particles being too small to sketch properly. The larger particles shown are as wide as the thickness of the sheet of "news" and the



apparent result on the machine would be pinholes or fluff, or both, according to the amount of filling used.

It seems impossible to suppose that such material can be used except in very small amounts on the news machine and give satisfactory results as compared with china clay.

If a clay or talc contains a considerable percentage of particles whose diameter is greater than, or approximate to the width of the average fibre, it would appear to be quite unsuitable for use as a filling material particularly on unsized "news".

The average sample of ground talc is of this nature. On the other hand, all clays, even the crudest samples contains a large percentage of really fine stuff, that is particles that are small or very small as compared with the diameter of a fibre.

The figures below give an idea of the relative packing weights of various clays taking water, as the unit:

1 Pennsylvania clay=0.58	2 Cornish clay =0.99
3 Pennsylvania clay=0.88	4 Canadian Clay =0.96
5 Pennsylvania clay=0.67	6 Talcay N.-York =0.88
5 Pennsylvania clay=0.63	8 Pennsylvania clay=0.80
9. H.B. Cornish =0.89	10 P.A. Cornish =1.05
11 Hephzibah clay =1.06	12 Miner-Edgar =1.14
13 Cornish clay =1.02	14 Talc =1.15

The Pennsylvania clay samples have considerably the lowest weight per bulk, and other things being equal would retain best in the sheet, this having been found to be the case in practice.

Evidently to get a good retention to-day on the news machine we must have filling material of the highest state of fineness coupled if possible with the lowest Specific Gravity in which case the Pennsylvania clays would come first and all kinds of ground Talc last.

While on the subject of clays it might be interesting to mention the use of coloured filling materials as opposed to white fillers at the present time.

It is a matter of common knowledge that the ordinary mixed raw stock used for "news" making has a decided yellowish or brownish tint, and to correct this low colour a small quantity of Blue or violet dye is generally used. Due to the high price of these co-

lours, people are on the look out for cheap substitutes.

Common lamp black if in a very fine state of subdivision has quite a considerable "toning" effect on raw stock and yields quite a fair white sheet, and it is not unreasonable to suppose that a number of substitutes may be found which will give a fair toning effect on paper. In thinking over these matters some time since it occurred to the writer that "Blue" clay ought to act as a fair substitute for blue dye and in addition act as a filler itself. On putting this theory into practice it was found to act very well indeed for such absolutely crude material. The clay used was the blue marine clay which extends up the St. Maurice Valley. This clay is of a remarkable degree of fineness, much finer in fact than ordinary clays. When some of this clay is emulsified with water and poured into a glass full of recent pulp mixture, the blue tint of the clay instantly changes the yellow stocks to a very fine white and when this is made into a sheet of paper and steam dried, we get a fair class white sheet, very much superior to paper made from uncoloured raw pulp. This clay in addition to numerous laboratory trials has been run over the paper machine with good results. The bluish tint of the clay is due to its containing about 5½ percent of Iron in the stock of protoxide. When this clay is dried, the colour is light bluish-grey, there being sufficient bluish tint to largely counteract the yellowish tint of raw pulp.

At first sight this seems an extraordinary material to attempt to use for putting into white paper, as it looks like placing common "dirt" into the pulp mixture, but when one comes to examine this clay in the bulk as it exists in the hillside, a new light is thrown on the material. Its outstanding points are 1 Comparative freedom from sand and grit; 2 Remarkable fineness of the actual fine clay; 3 Blue tint; 4 Very high retention in sheet; 5 Capacity of producing good finish "on sheet"; 6 Most readily freed from all grit.

A few facts and figures as to this clay deposit may be of interest. Geologically, it is of the ordinary marine clay type and from its composition it has been evidently derived from the denudation of micaceous, crystalline, felspathic rocks and been deposited in a deep sea, far from the ancient shore line, which would account for its relative freedom from grit and extreme fineness of its clay particles.

Over a thickness of 20 feet the clay averaged 78 per cent of fine clay; in places rising up to 95% or more of fine matter. The sand can be got rid of by simply well mixing the clay with water and allowing the emulsion to stand, when the sand rapidly falls to the bottom, leaving practically all the fine clay in suspension.

Due to its ultra fineness, the clay remains suspended for hours at a stretch as the following figures shows:—

Taken—25% emulsion of "Blue" clay in water — allowed to stand and settle

Time	2 minutes	7 minutes	15 minutes	4¼ hours	20½ hours
Quantity of clay in suspension	18¾ p.c.	17¾ p.c.	16 p.c.	12 p.c.	9½ p.c.

These figures show the remarkable fineness of the clay and its suitability for paper making and it is evident that were this "white" clay it would be the ideal filler for paper.

Retention in sheet

Clay added	4 p.c.	6 p.c.	8 p.c.
Percentage of clay added retained in dry sheet	85 p.c.	73 p.c.	71 p.c.

It may be said that 8 per cent of wet blue clay (after

illumination of sand) or 6 per cent calculated to dry basis may be actually put into the beater and give a very fair coloured news sheet showing 4½ per cent actual clay content on burning, being totally free from grit and producing a good finish on the sheet.

It may be stated definitely that blue clay of this type may be used successfully on the "news" machine at the present time, eliminating the use of dyestuffs and china clay entirely, with considerable reduction in costs of manufacture.

PROPOSED STANDARD METHODS OF ANALYSIS

Submitted by the Committee on Standards, appointed by the Technical Section of the Canadian Pulp and Paper Association.

SULPHATE OF ALUMINA:—

Sampling.

Five per cent of the packages in the shipment should be samples in the case of ground alum. The portions from the various barrels or bags shall be mixed together in one composite sample representing the shipment.

Equal quantities from twelve taken at random shall be taken as a representative sample of alum for each carload shipment of ingot alum. These samples shall be ground together in one composite sample representing the shipment. Alum should be readily soluble in cold water.

Insoluble Matter.

Weigh out 25 grammes of the alum in a beaker and dissolve in about 200 Cc. of hot distilled water. Filter through a weighed gooch or alundum crucible, using suction to hasten filtration; wash well, dry to constant weight and calculate per cent Insoluble Matter.

Alumina and Iron Oxide.

The filtrate from the foregoing should be poured into a 500 Cc. graduated flask, carefully rinsing the last traces of the filtrate into the flask. The flask is brought to the temperature of calibration, the liquid diluted to the mark, and well shaken. Draw out 100 Cc. of the solution by means of a pipette and dilute to 500 Cc. in a calibrated flask. From this second flask 50 Cc. (corresponding to 0.5 Gm.) is drawn out with a pipette, and transferred to a beaker.

Dilute to about 150 Cc. of concentrated hydrochloric acid and a few drops of concentrated nitric acid; heat solution to boiling, and add slowly dilute ammonia until a slight excess is present; continue boiling until there is only a faint odor of ammonia perceptible. Remove beaker from source of heat and filter on an 11 Cm. washed filter, using suction in conjunction with a platinum filter cone; wash with hot water until free from chloride, and ignite the moist precipitate in a platinum crucible over a bunsen burner. When the filter has been entirely consumed ignite over the highest heat of the blast or No. 4 Meker burner, to constant weight. Calculate percentage of Al_2O_3 1 Fe_2O_3 . (We have found by experiments that igniting for $\frac{1}{2}$ hour over a blast or No. 4 Meker burner is sufficient to dehydrate the alumina).

Note:—Before precipitation with NH_4OH , if a little tannin is added, the precipitate will be more granular and easily filtered.

Iron.

From the first 500 Cc. flask, transfer to a beaker 100 Cc. (corresponding to 5 Gm.) with a pipette, add 5 Cc. of concentrated sulphuric acid, and heat solution nearly to boiling. Add permanganate drop by drop till permanent strong pink color, to oxidize any possible reducing matter. Run through a Jones reductor in the usual manner, cool and titrate with standard potassium permanganate solution.

Calculate Percentage of Fe_2O_3 .

For alum containing less than 0.1 per cent iron use the following method adapted from that of Stokes and Cain J. A. C. S., 29, 4, 409-447 (April, 1907), making

use of a colorimeter similar to the one therein described in which two test tubes 8 inch by 1 inch whose diameters are very nearly alike, are employed.

A solution, containing 0.1000 Gm. ferrous iron per litre is made by dissolving 0.7026 Gm. ferrous ammonium sulphate in a litre of water. By diluting 10 Cc. of this solution to 500 Cc., to 10 Cc. of the resulting solution will contain .00002 Gm. of iron. This produces about the proper depth of color for comparison.

Into one of the test tubes, 10 Cc. of the above solution is put, together with 10 Cc. of water, 5 Cc. of sulphocyanic acid solution (saturated with mercuric sulphocyanate, see above reference, pp. 413 and 444) .01 Gm. ammonium persulphate and 10 Cc. amyl alcohol. Into the other tube, .5 Cc. of the alum solution is run from a 10 Cc. burette, and 19.5 water 5 Cc. sulphocyanic acid solution .01 Gm. ammonium persulphate, and 10 Cc. of amyl alcohol added. Both tubes are then thoroughly shaken and comparison of the colors in the colorimeter is made as soon as the amyl alcohol layer is clear. If the color of the alum solution is weak it is adjusted to standard by adding alum solution, 1 Cc. at a time, and shaking well. If the color is too strong, the alum solution may be added to the iron standard until the colors match, and then considering the "alum solution used" to be the difference between the amount of alum solution in one tube and the amount added to the iron standard tube. By dividing .00002 by the number of grammes of alum represented by the alum solution used, and multiplying this quotient by 100, the percentage of iron in the alum is obtained. This number multiplied by 1.43 (the ratio of ferric oxide to iron) gives the per cent of iron calculated as iron oxide, Fe_2O_3 .

(a) The ferrous iron should also be determined and results subtracted from the total iron to obtain the ferric iron presentation.

Optional method for ferrous and ferric iron.

Ferrous iron:—

5 grms. of sample are dissolved in 15 Cc. 1 — 1 hydrochloric acid. Heat until dissolved. Add 10 Cc. mercuric chloride. (50 grms. per L.) and pour into a 600 Cc. beaker containing 400 Cc. water and 12 to 15 Cc. phosphorous titrating solution and titrate with standard potassium permanganate.

Titrate a blank on the solutions used and subtract from the first titration.

Determine iron value of the permanganate by means of ferrous ammonium sulphate.

The phosphorous titrating solution is made by dissolving 160 grms. of manganous sulphate in 1750 Cc. of water and then adding 330 Ccc. phosphoric acid (syrup sp. gr. 1.7) and 320 Cc. concentrated sulphuric acid.

The total iron is determined by the same method except that just as the alum is dissolved in the hydrochloric acid, a solution of stannous chloride is added drop by drop and boiled very gently until the yellow color due to ferric iron is just completely discharged.

Sulphuric Anhydride.

50 Cc. of the 1 per cent alum solution is drawn out with a pipette and transferred to a beaker. Dilute

to about 200 Cc. and 1 Cc. concentrated hydrochloric acid, bring to boil and then add drop by drop 10 Cc. of 5 per cent barium chloride solution. Allow the precipitate to settle. Filter, wash, and ignite in the usual manner.

(b) The gravimetric method of sulphates is satisfactory when all sulphates are present as free sulphuric acid, sulphates of ferrous or ferric iron and sulphate of alumina. If sulphates of the alkalis, lime zinc or magnesia are present, serious errors may be encountered unless all these impurities are determined and the proper correction is made.

Optional method for sulphates combined with iron or alumina.

An aliquot part of the alum solution equivalent to .5 gm. alum is pipetted off into a 400 Cc. beaker containing 250 Cc. distilled water which has been boiled to remove carbon dioxide.

The solution is then brought to the boiling point and titrated to a faint pink with N/5 caustic soda solution using 1 Cc. phenolphthalein as an indicator.

When the end point appears to be just reached, boil the solution for one minute. The pink color should disappear during the boiling and the titration is then completed. Only a very few drops will be necessary for the second titration.

The value of the N/5 caustic soda in terms of sulphuric anhydride combined with iron and alumina may be found by standardizing against 1 gm. of C. P. Potash alum. The total alumina in the potash alum must be carefully determined and the amount of sulphuric anhydride combined with the alumina must be calculated.

Alumina oxide $\times 2.3504 = \text{SO}_3$ present in $\text{Al}_2(\text{SO}_4)_3$.
Calculation of results.

Only the alum dissolved in water in the above analysis shall enter into the results.

Iron and Aluminium oxides minus the total iron oxide equals total alumina.

Ferric iron $\times 2.1509$:—Sulphuric anhydride.

Ferrous iron $\times 1.4339$:—Sulphuric anhydride.

Total sulphuric anhydride determined by titration less the sulphuric anhydride present in the ferrous and ferric iron equals the free sulphuric anhydride and the sulphuric anhydride combined with the alumina.

Ferrous iron $\times 2.7204$:—ferrous sulphate.

Ferric iron $\times 3.5807$:—ferric sulphate.

Sulphuric anhydride free or combined with alumina $\times 1.4255$:—Aluminium Sulphate $\text{Al}_2(\text{SO}_4)_3$.

Aluminium sulphate $\times .2985$:—combined alumina.

If the combined alumina is less than the total alumina, the difference is basic alumina.

If the results obtained for combined alumina are more than the total alumina, free sulphuric acid must be present. In the latter case, calculate as follows:

Total alumina $\times 3.3504$:—alumina sulphate.

Aluminium sulphate $\times 7.015$:—combined sulphuric anhydride.

Free and combined SO_3 less combined SO_3 :—free SO_3 .

Free sulphuric anhydride $\times 1.2250$:—Free sulphuric acid.

Basic alumina or free sulphuric acid may be confirmed by the Potassium fluoride method.

Form of Reporting Results.

Water insoluble matter.....
Ferrous Sulphate.....
Ferric Sulphate.....

Basic Alumina.....
Free Sulphuric Acid.....
Aluminium Sulphate.....
Combined water (by difference).....

100.00%

Free Sulphuric Acid.

The method is described in J. I. and Eng. Chem. Vol. 7, No. 12, p. 1059, and is as follows:

3,4038 grammes of the finely ground sample or an equivalent amount in solution (100 Cc. sample containing 34,038 grammes per liter) are taken for analysis. The powder is dissolved by boiling with 100 Cc. of distilled water in a 4 in. casserole with clock glass cover. To the hot solution 10 Cc. of $\text{N} 2 \text{H}_2 \text{SO}_4$ are added, and after cooling to room temperature (20 deg. Cent.), 18 to 20 Cc. of the potassium fluoride reagent are added and $\frac{1}{2}$ Cc. of phenolphthalein indicator. The solution is now titrated with N/2 KOH, added drop by drop until a delicate pink color, persisting for one minute is obtained. This titration shows whether the product is basic or acid.

Free Acid :—(Cc. KOH— Cc. H_2SO_4) $\times 0.72$.

Note.—In alum containing small amounts of iron the error is often made if all the iron is considered as being in the ferrous state of oxidation and combined with sulphuric anhydride as ferrous sulphate.

The aluminium sulphate should be calculated from the SO_3 left by subtracting the SO_3 combined as ferrous sulphate and free acid from the total SO_3 as determined above.

Potassium Fluoride.

The reagent may be prepared by dissolving 1,000 grammes of potassium fluoride in 1,200 Cc. of hot CO_2 -free water, then neutralizing the solution with alkali or hydrofluoric acid as the case may require using 5 Cc. of phenolphthalein indicator. Dilute sulphuric acid may be used in place of hydrofluoric acid in the final adjustment, to get a neutral product. 1 Cc. of the solution in 10 Cc. of CO_2 -free water should appear a faint pink. The concentrated mix is filtered if necessary, and then diluted to 2,000 Cc. with CO_2 -free water. The gravity will now be approximately 1.32 (about 35 deg. Be.) : 1 Cc. contain 0.5 Gm. potassium fluoride salt.

ROSIN AND ROSIN SIZE.

Sampling.

Samples from 10 per cent of the barrels should be taken and a pound sample taken from each end of each barrel. Total sample may be crushed and reduced by mixing and quartering to laboratory sample.

Grade.

Paper making rosin, grade from B. to G. B. being lowest and G. the best. Extracted rosin is sometimes questioned.

Saponifications Number.

Weigh 2 grammes of powdered rosin into an Erlenmeyer Flask of 300 Cc. capacity. Add 25 Cc. half normal alcohol KOH and boil for two hours, using a reflux condenser. Shake the flask frequently with a swirling motion to prevent the rosin from sticking to the sides of the flask above the liquor line. Cool and titrate the excess KOH with half-normal acid and phenolphthalein. Calculate the milligrammes of KOH consumed per gramme of rosin. This is the saponifica-

tion number. In each case run a blank on the KOH solution by boiling 25 Cc. of the solution for two hours in exactly the same manner as the saponification proper is carried out and titrating.

Acid Number.

Dissolve one gramme of powdered rosin in warm alcohol (neutral to phenolphthalein) cool and titrate the solution with half-normal alcohol potassium hydroxide, using phenolphthalein. Express the result as milligrammes of KOH consumed per gramme of rosin. This is the acid number.

Ester Number.

The ester number is the difference between the saponification number and the acid number.

Unaponifiable Matter.

Saponify about 5 grammes of rosin by boiling for two hours with excess of half-normal alcohol potash. Evaporate most of the alcohol, add about 100 Cc. of water and extract in a separatory funnel with acid-free ether exactly as in the determination of free rosin size.

"Rosin unsaponifying in a queous solution" is determined by boiling 5 grammes rosin for 4 hours in an aqueous solution containing 1 gramme sodium carbonate, and then extract as above. This result represents more nearly the rosin which is unacted upon in determining the acid number and is considered to be the unsaponifiable as far as size making purposes are concerned.

Laboratory Sizing Test.

To determine the value of a rosin size in the Laboratory is very difficult owing to the fact that the beating and drying conditions are not representative of mill practice and that impurities in the paper stock do not effect the sizing in the same way as on the machine.

Relative sizing values may be roughly determined from hand made sheets, if effort is made to eliminate all other variables.

Solubility.

Only well saponified rosin soaps will dissolve completely in water by ordinary methods of dilution, unless their solubility is increased by the presence of protective colloids. As the major portion of the Canadian mills are using high free rosin sizes prepared solely from rosin and soda the following methods are submitted as being applicable mainly for the determination of the value of such rosin soap solutions for sizing purposes.

Sampling.

The sample of size solution taken for analysis should be drawn from the dilute storage or measuring tanks, after it is prepared ready for use. This sample should be further diluted until it contains approximately 1 per cent of total solids.

Although the diluted solution may be somewhat hydrolized providing it has been improperly diluted, yet the analysis of it in this condition will more accurately interpret its sizing value, than if the undiluted sample is taken.

Total Solids.

100 Cc. is concentrated to solids on a water bath and

then dried at 105 deg. to constant weight. If dried in a weighed dish containing rod and sand, the drying is greatly facilitated.

Effective Free Rosin.

This solution should be as free as possible from a tendency to form sediment on standing.

For the determination of any coarse rosin in suspension, which is ineffective for sizing purposes, 300 Cc. of the solution should be boiled for 5 minutes and then filtered and washed with hot water. The residue being dried on a weighed filter and weight determined. Calculate to per cent on dry basis.

Total Free Rosin.

Take 100 Cc. of the 1 per cent size solution and extract in a separatory funnel with 50 to 75 Cc. acid free ether without shaking too hard. If difficulty is experienced in breaking up the emulsion, 5 to 10 cc. neutral absolute grain alcohol may be added which will accelerate the separation.

The aqueous solution drawn off into a second separatory funnel and extracted as above. The aqueous solution is again drawn off and the ether added to the original ether extract.

In all, three ether extractions should be made on the aqueous soap solution.

The combined ether extracts are then washed three times with 50 Cc. distilled water. To the first water washing, may be added a little alcohol if necessary.

The last two washings should be allowed to separate without the addition of alcohol.

The washed ether solution is then transferred through the mouth of the separatory funnel to a weighed beaker, or Soxhlet evaporating flask, the separatory funnel washed with 25 Cc. ether and added to the original ether solution.

The ether is evaporated and the residue dried to constant weights in the oven at 100 deg. to 105 deg. C.

This residue is calculated to percent on the basis of the dry size.

Note:—It is especially important that the ether used in this determination shall have been specially prepared by washing once with sodium carbonate solution and then sufficiently with water. It should be tested with a moist piece of sensitive blue litmus paper, which should not change color when completely submerged in the ether for fifteen minutes.

TOTAL ROSIN.—Take 50 Cc. of the original size solution into a separatory funnel and acidify with 10 Cc. of dilute (1-5) sulphuric acid. Add 50 Cc. of ether, shake well and allow to stand until the two layers are completely separated. Draw off and wash the ether with two 25 Cc. portions of water, drawing off the water into the second funnel and pouring the ether extract into a weighed Soxhlet. Rinse the first funnel with 25 Cc. of ether into the second funnel. Shake well and draw off the water layer into the first funnel. Wash as above with two 25 Cc. portions of water. Repeat once more. Evaporate the ether from the combined extracts as in the Free Rosin determination. Dry to constant weight at not over 100 deg. Cent. Calculate per cent on dry basis and multiply by 100 to obtain the percentage of combined rosin.

The ether in this case does not need to be specially purified, though it should be as free from any non-volatile residue.

Rapid Methods for the Determination of Total Rosin and Effective Free Rosin for Mill Control.

Prior to this determination an average figure must be determined which represents the "Rosin Unsaponifying in Aqueous Solution" by making a number of determinations on the rosin being used, using the method already described. This may be considered as representing the rosin which does not saponify on direct titration.

FREE ROSIN.—100 cc. of approximately 1 per cent solution, is boiled for 5 minutes to remove suspended rosin, and passed through weighed filter. The warm filtrate is heated to near boiling, with equal volumes of neutral absolutely grain alcohol, and titrated with a 1.5 normal solution of NaOH. using phenolphthalein as indicator. This result is calculated as free abietic acid having combining weight of 336.

Total free rosin:—Suspended rosin

Abietic acid.

Unsaponifying matter.

TOTAL ROSIN.—The alcohol is evaporated and the total rosin in the above solution is now precipitated with an excess of $\frac{1}{2}$ normal, H_2SO_4 and the coagulated rosin collected. Then cool solution, filter and titrate back with normal alkali (NaOH). From this the total rosin acids can be determined, which added to the unsaponifying rosin and suspended rosin will give the total rosin.

(This method is to be used when the size solution contains a negligible amount of Free Alkali.

Alternative Methods for Rapid Analysis.

Take 100 cc. of the 1% solution into a separatory funnel and acidify with 1/10 N. H_2SO_4 ; so that after thoroughly shaking the solution is acid. Add 100 Cc. of ether (previously washed with water) and shake. The aqueous solution is brought into a second separatory funnel. The ether solution is washed with water and the wash water added to the second funnel. The contents of the second funnel is washed with ether, which afterwards is added to the first extract. The aqueous solution is titrated with 1/10 NaOH.

If a=cc. N/10 alkali used.

b=cc. N/10 sulphuric C. acid then are.

(b—a) cc. H_2SO_4 N/10 used for neutralization of alkali in size.

(b—a) 0.0031=Amount of alkali as Na_2O .

(b—a) 0.0293=Rosin combined as Anhydride.

(b—a) 0.0302=Rosin combined as Hydrate.

In the ether extract the rosin is determined with the 1/10 normal alcoholic alkali solution, using phenolphthalein.

When d cc. are required then:—

d—0.034=Total rosin=Rosin acids+unsaponifiable rosin.

d—0.0302=Rosin acid.

d—(0.034—0.0302)=d—0.0038=unsaponifiable.

0.0302 (d+a—b)=free rosin acid.

Result:

Alkali (as Na_2O) %

Rosin combined (as anhydride) %

Rosin free (acid + unsaponifiable) %

Water and impurities (x)

(x) The impurities may be determined by filterating the aqueous solution and weighing filter before and after filtering. This method also assumes the absence of free alkali.

(This method assumes that the size solution contains a negligible amount of Free Alkali.)

Free Alkali.

About 10 gr. of the rosin soap is dissolved in a little water and shaken in a separatory funnel with sufficient neutral sodium chlorid so that a portion of it remains undissolved. Opening the stop-cock carefully the solution is allowed to run into a second separatory funnel, the undissolved NaCl thereby serving as a filter. The soap remaining in the first funnel is washed with a saturated solution of neutral sodium chloride and the wash-solution added to the second funnel. To the solution is allowed to run into a second separatory free alkali, and a little neutral soap, but no free rosin 80 cc. 1/10 normal acid is added, shaken with ether. and the ether-solution as well as the water solution is titrated with 1/10 normal alkali-solution. If n, cc. alkali is required this is the value for free alkali in the soap:

(80-n) 0.0053 gr. Sodium carbonate.

Note.—If it is desired to determine free Alkali in the diluted solution, salt may be added until there is super-saturation, and then proceed as in above method.

(To be continued).

Correspondence

Mattagami Pulp and Paper Company, Limited.

Toronto, Ont., Sept. 5th, 1916.

To the Editor, Pulp and Paper Magazine,
Montreal, Que.,

Dear Sir:—

Referring to an item headed, "Mattagami Company changes Hands," appearing on page 284 of the Pulp and Paper Magazine of the 1st inst.

There is, absolutely no truth in, nor foundation for the statements therein given that the company "has changed hands and is now owned by the Armstrongs of New York and Pennsylvania Company," nor that "the new owners have bought out the interests of those who were engaged in the construction of the mill." Neither has there been any change in this company's officials, other than in the position of General Manager, and which is now filled by Mr. S. R. Armstrong.

Very truly yours,

DUNCAN CHISHOLM.

President.

"THE GREAT AMPHIBIAN."

The Right Hon. Winston Churchill tells in brilliant fashion the story of Britain's double defense against Prussian oppression in an article entitled "The Great Amphibian."

It was first published in the New York Tribune but is now being distributed in the form of a booklet by Sadler & Haworth the well-known tanners of Montreal and Toronto.

They have a belt known as the "Amphibia" which they have advertised very widely. In its way it is to belting what the navy and army of Britain are to her safety.

Its a clever bit of advertising and goes to show that despite what Shakespeare said there is something in a name—especially the name "Amphibia". A copy of the booklet is free for the asking.

STANDARD FORM OF CONTRACT

The News-Print Manufacturers Association has just sent out a sample of new standard form of contract which has been prepared by a special committee appointed sometime ago:—

In consideration of the mutual covenants and agreements hereinafter set out, the Standard Paper Company or the City of New York State of New York, hereinafter called the seller, agrees to sell and hereby does sell, and The News Publishing Company, of the City of New York, State of New York, hereinafter called the purchaser, agrees to buy and pay for, and hereby does buy, six hundred (600) tons of roll news print paper required to print editions of "The Morning News", a newspaper published in the City of New York, State of New York, during the period beginning January 1, 1916, and ending December 31, 1916, both dates inclusive, to be ordered and delivered in equal monthly instalments of fifty (50) tons, not cumulative, subject to the following terms and conditions:—

1. Trade Customs.

This contract, together with the trade customs attached hereto and made a part hereof, is complete in itself and sets forth the agreement and conditions between the parties hereto, and it may not be assigned by either party except by consent of the other.

2. Specifications.

(a) The said paper shall be of substantially the same average quality as sample attached to this agreement and of approximately the following basis of weight:—24 x 36—32/500, without reference to production basis.

(b) Widths of rolls: 66 inches, 49½ inches, 33 inches.

3. Price and Delivery.

(a) \$2.38 per one hundred pounds actual weight of rolls, including paper and wrappers, but excluding cores, on board cars at Mill. Price includes freight allowance of 18 cents per one hundred pounds. Routing is reserved to the seller.

(b) The paper to be furnished under this agreement shall be the product of the Standard Paper Company with mills located at Poughkeepsie, N. Y.

4. Terms.

Net cash thirty (30) days from date of invoice, or not later than the 15th day of the month for all paper shipped the previous month. Payments shall be made in New York Exchange.

5. Contingencies.

In case the seller shall be unable and fail at any time to make and supply, or the purchaser shall be unable and fail to take and used said paper in consequence of strikes, fire, explosion, lock-outs, combinations of workmen, flood, drought, embargoes, war, the acts of God, the public enemy or any cause beyond the control of either party hereto, the seller shall not be liable to the purchaser for failure to supply such paper, nor shall the purchaser be liable to the seller for failure to take such paper during the period of such disability.

6. Cancellation.

If the purchaser shall fail to pay any amounts when due under this contract, or fail to make settlements, as provided herein, the seller may, at its option, cancel this contract, refuse to furnish any more paper thereunder, and declare the obligations of the purchaser for all paper furnished hereunder due forthwith, notwithstanding the terms hereof, but the purchaser shall remain liable to the seller for all loss and damage sustained by reason of such failure.

This agreement is executed in duplicate original and shall be governed by the laws of the place of the legal domicile of the seller.

Executed at No. 100 Boardway, City of New York, State of New York, this 10th day of December, 1915.

The Standard Paper Company Seller,

By Richard Roe, President.

The News Publishing Company Purchaser,

By John Doe, President.

AMERICAN PRINTING AND PUBLISHING INDUSTRY.

A review of the printing and publishing industry of the United States in the years 1914 and 1909 is given by the United States Bureau of the Census in its summary of the results of the 1914 study of that industry. The five-year period showed increases in number of establishments and in the value of products.

According to the classification adopted, the printing and publishing industry is made up of three branches, comprising: (1) Establishments whose chief business is book and job printing, book printing and publishing, or book publishing only; (2) establishments whose sole or chief business is music printing, or music printing and publishing, or music publishing only; and (3) establishments which are engaged in the printing and publishing, or in the publishing only, of newspapers and periodicals, some of the first named doing job work also.

The number of establishments in this industry in 1914 aggregated 31,612, and the total value of their products amounted to \$810,508,111. These figures represent increases of 6.2 per cent and 22.3 per cent, respectively, as compared with those for 1909—29,757 establishments, with products valued at \$662,591,959.

PULP FREIGHT RATES ADVANCED.

The Interstate Commerce Commission has granted an increase of approximately 2½ per cent. on freight rates on pulp wood shipped from Canada to points in the Central and Eastern States.

The commission entered upon a hearing concerning the proposed increases enumerated in cases listed under docket 817 on April 7th. At this time the proposed rates were suspended hearing until August 8th and on the latter date were resuspended until February 8th, 1917.

This order was vacated and the proposed schedules of rates were allowed to become effective.

JAPANESE PAPER MILLS, BUSY.

The paper milling industry of Japan is attaining complete independence as a result of the increased activity following the European war. Many new factories have been planned, and it is expected that they will be in operation by April of next year, when the total output will reach approximately 50,000 tons of pulp a year.

PULP AND PAPER NEWS

The Interlake Tissue Mills, Merritton, Ont., made a most attractive and comprehensive display of the various lines manufactured by them in a gaily decorated booth in the Manufacturers' Building at the Canadian National Exhibition, Toronto. The exhibit consisted of white and colored tissues, light wrappings, plain and crepe toilet papers, paper napkins, towels and paper specialties, and was in charge of G. A. Browne.

* * *

John Martin of the John Martin Paper Co., Winnipeg, Man., spent a few days in Toronto and Montreal, last week on business, and called upon a number of members of the trade.

* * *

The steamer Waihemo left Powell River, B. C., recently, loaded with 2,500 tons of news print paper, for Australia. Each roll was eighty-seven inches wide.

* * *

An extension is being built to the finishing rooms of the Windsor mill of the Canada Paper Co., at Windsor Mills, Que. It will be two storeys high, in dimensions, 128 x 57 feet, and constructed of reinforced concrete and brick. New supercalenders are also being added to the equipment of the plant.

* * *

At a meeting of the directors of the Provincial Paper Mills Co., Limited, held in Toronto recently, it was decided to have plans and specifications prepared for a large new mill which will be erected at Mille Roches, Ont. It is the intention of the company to have a two machine mill and one machine will be installed as soon as the structure is completed while the second one will be added later. The new Fourdrinier will be 148 inches wide, and will have an output of about twenty-five tons a day of book and writing paper.

* * *

A charter has been granted to the Hought Paper Mills, Limited, who recently bought the Thomson plant at Camden East, Ont., which is now being thoroughly overhauled and new equipment added. The new company, which is capitalized at \$100,000, will manufacture specialties. L. F. Hought, of Buffalo, N. Y., is President of the new organization, Wilbur E. Hought is vice-president and treasurer and E. A. Crippen, of Toronto, secretary and Manager of Sales. The sales office of the company will be at 419 King street west, Toronto, Mr. Hought is now at the mill supervising the extensive changes that are taking place which will include the addition of a new machine.

* * *

The Twin Falls Lumber Co., Limited, with head offices in Toronto and a capital stock of \$100,000 has been granted a charter. The company is empowered to carry on the business of timber merchants, deal in timber licenses and limits and to engage in the manufacture and sale of pulp and paper.

A. M. Huestis, paper mills representative of Toronto, Ont., has returned from a trip to the Old Country where he spent several weeks.

* * *

A charter has been granted to the Canadian Poultry Journal Publishing Co., Limited, with headquarters in Hamilton, Ont., and a capital stock of \$20,000. Among the incorporators are Robert H. Dewar and Robert H. Essex, Fruitland, Ont., W. H. Cross, and J. H. Holbrook, Hamilton, Ont., and A. E. Walker, Bartonville.

* * *

George A. Howell of the Howell Trading Co., Toronto, Ont., has returned from spending several weeks vacation at Gull Lake, Ont.

* * *

Excavation has been commenced at Merritton, Ont., for the new sulphite plant of the Lincoln Paper Mills Co., Limited. The new plant will have a capacity of thirty tons of unbleached sulphite, will be built of reinforced concrete and steel, and will cost in the neighborhood of \$300,000. It is expected that the industry will be in operation early next year.

* * *

The Empire Paper and Pulp Mills, Limited, which were recently incorporated with a capital stock of \$2,500,000 and head offices in Vancouver, are taking over the assets and undertakings of the Swanson Bay Forests, Wood Pulp and Lumber Mills, Limited, on Swanson Bay, which have been idle for the last five years. The people back of the new organization are understood to be in the interests which control the British Columbia Sulphite Fibre Co., who have a sixty ton mill at Mill Creek and have commenced preparations for the building of pulp and paper mills at Quatsino on Vancouver Island.

* * *

An extension is being built to the machine room of the Garden City Paper Mills Co., St. Catharines, Ont. The addition is 40 x 70 feet, one storey high and good progress is being made on the work.

* * *

According to a recent estimate British Columbia has four hundred billion feet of merchantable timber, board measurement. Cutting two billion feet per year and allowing nothing for natural increase and growth it would take two hundred years to exhaust the supply.

* * *

It is understood that the Oxford Paper Co., of Rumford, Maine, the Bryant Paper Co., of Kalamazoo, Mich., and the Provincial Paper Mills Co., Toronto, have entered into arrangement with a view to purchase the bleached sulphite plant of the Edward Partington Pulp and Paper Co., St. John, N. B., which has a capacity of about sixty tons daily and that an option has been secured on the plant.

The new three storey addition to the Interlake Tissue Mills, Merritton, Ont., has been completed and is used for, finishing purposes, being fitted with winders cutters and crepers. The company is rushed with business.

* * *

Joseph Slater, superintendent of the Espanola plant of the Spanish River Pulp and Paper Co., whose health has not been good for some time, has gone on an extended trip. W. J. Hussey is superintending both the Espanola and Sturgeon Falls plants at the present time.

* * *

The new sulphite mill of the Ontario Paper Co., at Thorold, Ont., which will have a capacity of fifty tons, has progressed so favorably in construction that it is expected it will be in operation next month. The mill has two digesters, 15 feet in diameter by 49 feet in height.

* * *

S. R. Armstrong, general manager of the Mattagami Pulp and Paper Co., who are erecting a seventy five ton bleached sulphite plant at Smmoth Rock Falls, Ont., is spending a few days at the plant on which good progress is being made with the concrete footings. About five hundred men are employed in construction work.

* * *

E. R. Heyland, of the Monteith Pulp and Timber Co., Toronto, who operate a large rossing plant at Monteith, Ont., has returned from an extend visit to the mills in Quebec. The Monteith Co. lost about fifteen hundred cords of pulp wood in the recent fires in Northern Ontario, and an official of the company estimates that the total number of cords consumed by the conflagration was sixty thousand. The price of pulp wood is constantly ascending and has increased about twenty-five per cent. within the past six months while it is difficult to obtain labor in the woods.

* * *

George Millington, who has been connected with some of the largest pulp mills in Canada, has joined the staff of the Foley-Rieger Pulp and Paper Co., Thorold, Ont., who are exceptionally busy in all their three plants.

* * *

It is understood that the Spanish River Pulp and Paper Co., are considering the erection of a sulphite plant at Espanola, Ont., which will have a capacity of seventy tons. The company have for some time felt the need of a sulphite division at Espanola, their nearest chemical pulp plant being at Sturgeon Falls. The four new grinders at Espanola will soon be in operation, making twenty-eight in all.

* * *

The extensions and installation of bleaching apparatus at the Riordon sulphite mill in Merritton, Ont., are nearly completed. It is expected that the company will be turning out bleached sulphite next month. The entire output of the Merritton plant will be bleached.

* * *

Rev. Dr. William Briggs, who is book steward of the Methodist Book and Publishing House, Toronto, which is the largest publishing firm in Canada and also the pioneer in that line, celebrated his eigthieth birthday on September 9th. He is still vigorous and at his desk every day. Dr. Briggs has for many years been a

director of the Toronto Paper Mfg. Co., whose plant is at Cornwall. He was appointed book steward thirty-seven years ago, and in that long period has taken only one holiday when he visited the Old Country. He is probably the oldest Canadian publisher in active work, with the exception of Sir Mackenzie Bowell of the Belleville Intelligencer, who is now in his ninety-fourth year and became connected with the Intelligencer as a printer's devil eighty-two years ago.

* * *

Extensive building operations are now going on at Iroquois Falls, Ont., to house the two new paper machines of the Abitibi Power and Paper Co., each of which will be 232 inches wide. They are the widest Fourdriniers in the world. Extensions will also be made to the ground wood and sulphite pulp plants. The total production of the mill with the new machines in running order as they are expected to be by the end of next year, will be augmented by seventy per cent.

CHEMISTS TO DISCUSS PAPER.

Chemical Week will be celebrated in New York from September 25 to 30, when the American Chemical Society and the Electrochemical Society meet, as well as the members of the American Pulp & Paper Makers' Association. In the opinion of the officers of these various organizations a great deal of information is likely to be developed in relation to the future of paper, and with the active work that is in hand to make paper out of sawdust and other wood waste there is likely to develop some interesting information in regard to the prospective supply. Whether the paper is to be cheaper or more expensive is a matter entirely of chemistry, say the chemists.

The American Chemical Society has issued the following statement:

"Paper is expensive nowadays for a number of reasons. The demand is great. Formerly we imported large quantities of sulphite pulp (a needed ingredient of nearly all papers, newspapers requiring 20 per cent of it) from Sweden and Norway. We make some here, but not enough. We can't get Scandinavian pulp now; they're all sold out. Chemicals needed in the paper industry have soared in price, and so has copper, of which large quantities are needed for the screens in paper machines. Then, paper makers are very human and like to get the highest market prices for their goods, and in this they appear to have succeeded. And we Americans are just beginning to learn how to utilize our waste products.

"The uses of paper are extending very rapidly. Bags made of spun paper are a growing Swedish product, and American manufacturers are beginning to produce them. Coffee bags are made of single strand, open weave, with a sheet of paper pulp inside. Onion bags are being offered. Several firms are engaged in making some very attractive furniture of water-proofed paper reeds woven over wooden and rattan frames. The Swedes are making a three-stranded spun paper rope for general use that is well spoken of. Paper horse-blankets sound queer, but they are being made. Fireproof fabrics sound still more odd, but they are making them, nevertheless, on a paper basis. Cement sacks are announced as coming soon. The Japanese, who are the most expert of all in the utility of paper, are making aviators' suits of oiled paper that are very light and resistant to cold."

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, Sept. 12.

There is some talk at Washington, D. C., that Representative Clyde H. Tavenner, of Illinois, will introduce a bill at this session recommending that the Government establish and run a paper mill of its own. The bill, it is said, would provide not only the paper supply for the government, but would also try and show the people just how much the paper manufacturers are making at this stage of the game. If such a bill is introduced there is little likelihood that it would even be considered by the committee during the present session.

* * *

Entries were placed on file in the United States District Court at Dayton, Ohio, overruling the motions of the complainant in the suit of the Chicago Oyster Pail Company against the Colin Gardner Paper Company, of Middletown, and others, for orders of the Court requiring the Gardner company and the Ohio Box Board Company to make definite and certain the allegations of the first defense to the first and second causes of action as contained in their respective answers.

* * *

The Paper Products Company, 49 Terminal Way Pittsburgh, Pa., manufactures the "Star" paper bottles, reports that, although it is producing 40,000 bottles every twenty-four hours, its production is sold for months ahead.

* * *

Work another unite to the Hawley Pulp and Paper Mill at Oregon City, Oregon, will begin January 1st, at an estimated cost of \$1,000,000. By that time the unit now under way will have been completed. The proposed addition will be reinforced concrete. The Newington Paper Company Newington, Conn., has filed a preliminary certificate of dissolution. The document is signed by Thomas Garvin and William A. Riley, a majority of the directors.

* * *

The Great Northern Paper Company, at Millinocket, Maine, is installing another paper machine which will be ready for operation about January 1st. The Company recently added a big paper machine which increased its capacity and the latest machine will still further add to the output of the mill, which makes news print exclusively.

* * *

The Rossman wire mill located on the westerly side of the Kinderhook creek at Rossman, N. Y., has been purchased by the Hoboken Paper Company, of Hoboken, N. J. It will be overhauled, equipped with machinery to manufacture a high grade of paper and as quickly as possible will be running. The property includes a large mill and storehouse, etc., and about fifty acres of land.

* * *

The Howland Pulp & Paper Company, with mills, water power and timber land at Howland and Enfield,

Maine, sold its entire property to the Howland Pulp & Paper Corporation of Brattleboro, Vermont, for \$225,000. The officers of the new corporation are Amos L. Blandin, president; George L. Lewis treasurer, both of Brattleboro, Vermont.

* * *

Extensive improvements are being made to the plants formerly owned by the Progressive Pulp & Paper Company, near Plattsburgh, N. Y., which were recently taken over by the Underwood Paper Mills, Inc., and the Plattsburgh Wall Paper Company in which considerable local capital is interested. About \$90,000 is being expended for the work, the contract for which has been awarded to R. H. Rheinlander, of Glens Falls, N. Y.

* * *

A. J. Archibald Co., Inc., is a new concern just starting with offices at 38 Park Row, New York. The company will deal in all kinds of paper, but principally for the export trade. The officers of the company are B. B. Goldberg, president; Myer Singer, vice-president and treasurer; A. J. Archibald, secretary. Mr. Archibald is practical man of the business and is well-known in paper circles in New York.

* * *

The Interstate Commerce Commission has granted the fourth section application of F. A. Leland, Chairman of the Southwestern Tariff Committee in behalf of all carriers parties to his I. C. C. No. 957, to add from points of origin named therein to Houston and Galveston and points taking the same rates, writing paper to the provisions of paragraph, 1,368-A the rates to apply to straight or mixed carloads.

* * *

At the annual meeting of the W. H. Parsons & Co., the Prejepsco Paper Company and the Sagadahoc Towing Company, held at the office of the allied companies in Topsham, Maine. It was voted in each case to increase the number of directors to seven, and addition to two in each case. The election of officers of the three companies resulted as follows: Prejepsco Paper Company and Sagadahoc Towing Company, Justice, A. B. Cowles, president; William W. Nearing, vice-president and general manager; William Glasson, treasurer; E. P. Cowles, secretary. W. H. Parsons & Co., Justice A. B. Cowles, president; William W. Nearing, vice-president and general manager; William Glasson, treasurer; E. P. Cowles, secretary.

* * *

M. Austin has just returned from a trip through the mills in the Black River and Oswego Valleys in the interests of O. H. Anderson & Co. of 38 Park Row, New York. He reports great activity in the mills and says that many manufacturers refuse to quote prices, for they will have many undiled orders left on their books which were taken at low prices.

A severe wind storm recently blew down the smoke stack and also caused more or less damage to the roof of the mill of McIntyre Bros. & Roubush, Inc., at Fayetteville, N. Y. The replacing of the smoke stack necessitated closing down the mill for a week.

* * *

The Seeley Paper Mill, at Scotch Plains, N. J., was damaged to the extent of \$10,000 by the recent cloud-burst in that vicinity. Green Brook, on which this mill is situated was swollen to such an extent that it took the foundations out from under the mill and set the main part of the building at an angle of 45 degrees. About sixty bales of waste paper which were stored in the cellar were damaged by water. The officers of the company say that the mill will not be rebuilt by them. The mill is accordingly for sale.

* * *

About fifty thousand dollars is being spent by the Remington Power & Paper Company in the construction of a new concrete flume at its plant at Norfolk, N. Y. The flume is to be one thousand feet long, and will take the place of an old wooden one. It was started about a month ago and it is expected that it will be finished some time in October.

* * *

Among the improvements being installed at the Carthage Sulphite Pulp & Paper Company, Carthage, N. Y., is a new digester with a capacity of twenty-five tons. There are five other digesters in the plant equipment. This new one is fifteen feet in diameter and forty-two feet high with the steel construction resting on a solid concrete base. It will be enclosed in a building of structural steel brick and concrete.

A GOVERNMENT PAPER MILL.

Speaking of the proposal made by the United States Government to establish a paper mill, the Paper Trade Journal says in part:

As for the plant being a check on private plants, we fail to see where it could have any such influence, because if the Government was to make it own paper this very fact would eliminate any competition.

As for its aiding in research work, such a proposition belongs in the class with political rainbows. The fact is the Government now has a paper machine in one of its departments, and we hazard the statement that rust has worked more depreciation in it than has any wear and tear due to active operation.

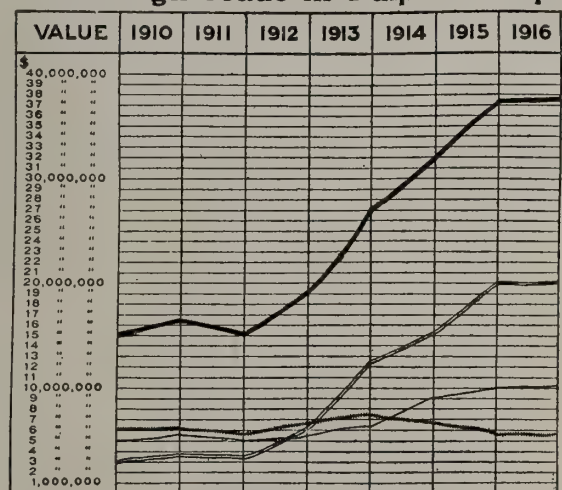
The facts are that if the mill should be built and operated, it would simply be a new home for political incurables, would be a haven for incompetent and inefficient paper makers, and would be as productive of expense as is the Government Printing Office, the shop that holds the world's record for being the most expensive printing office on the face of the earth.

The measure has not any points that commend it. It has many, very many, that demand for it the disapproval of the public at large. One may not believe that the bill will be enacted in law, but then one never can tell what will be done by a Congress that has just placed on the statute books a law compelling a railroad employer to pay ten hours' wages for eight hours' work.

Our Exports of Pulp and Paper

Regarding the export of pulp products, the September letter of the Canadian Bank of Commerce says:—"Although pulp and paper mills in Canada have for some time been operating at full capacity, stocks of news-print are decreasing. Prices of raw and of partly manufactured materials for papermaking are very much higher than they were a year ago, the causes being chiefly the increase in the cost of production, and the greater demand, particularly from the United States. Last year the cut of wood for pulp was far below the normal, which has resulted in a shortage at a time of increased demand and increased cost due to the scarcity of labor. A year ago raw pulpwood could be purchased in northern Ontario at \$4 a cord, whereas this year the price is \$5.25 and higher. While the most important factor in the increased cost of production is labor, the difficulty in procuring chemicals is not a negligible one. Up to the present the output of Cana-

Our Foreign Trade in Pulp and Paper



EXPLANATION—
 Total paper, pulp, pulpwood and manufactures of wood.
 Paper (all kinds).
 Pulp (mechanical and chemical).
 Pulpwood.
 (By permission of the Canadian Bank of Commerce.)

dian paper mills has not been checked by these factors, but during the summer fires and floods have caused some slight loss and interruption, although not to an appreciable extent. Contracts made during the early part of the year or previously are being filled, but there is a decided reluctance to contract far ahead even at prevailing high prices. Additional increases in the cost of production are feared, and the demand for pulp and newsprint will doubtless continue. The new mills planned and in course of construction, and the extensions to existing ones, will, if carried out as intended, add a per diem capacity of 840 tons of newsprint before the end of 1918. During the twelve months ending March last the amount of printing paper exported was 463,204 tons, or at the rate of 1,544 tons per day, as compared with a tonnage of 292,579, or 975 tons per day, in the corresponding period ending March, 1914. In the export of and demand for wrapping paper there are similar developments which even before the outbreak of the war attained considerable proportions.

HOWARD SMITH EMPLOYEES OUTING

On September 3rd the Directors of the Howard Smith Paper Mills, Limited, entertained their employees and families to a delightful day's sail over Lake St. Louis, the Soulange Canal and the beautiful Lake St. Francis to Stanley Island. Dinner was served at the Algonquin Hotel, and after a hearty repast their esteemed President, Mr. Howard Smith addressed the



Officials and Guests, Howard Smith Paper Company Excursion, September 3rd, 1916.

gathering. Over two hundred listened attentively to Mr. Smith as he discussed the paper situation of to-day and as he impressed upon them the necessity of each and everyone doing their utmost to keep up the reputation their mill achieved for the quality of its paper. The volume of applause at the end of Mr. Smith's speech must have assured him of the loyalty and support from the employees.

After two hours on the Island the return trip was made via the same route. The Steamer "Laurencia" was gaily bedecked with banners and flags, the penant

with the Beaver "S" (the watermark which appears in all the papers made by this mill) was flying from the stern flag pole. It was an ideal day for sailing, and an ideal route for a sail. Good music was rendered by the Beauharnois Brass Band and everyone enjoying the holiday returned greatly indebted to their Directors. Mr. C. H. Courtney personally supervised the arrangements for the trip and his untiring efforts to please everyone helped materially to make the outing a complete success.

The Howard Smith Paper Mills Limited are showing great consideration in the welfare of their employees. Recently the working hours of the mill were changed to three shifts of eight hours each for ma-



A Happy Excursion Party.

chine hands, and nine hours per day in place of ten for other departments. The feeling of goodfellowship which prevails throughout the entire organization plays no small part in the secret of this firm's success in the past few years, and the high grade of papers they produce.



Howard Smith Paper Company's Plants at Beauharnois.

ENGLAND REPULPING PAPER.

The shortage of paper in England has resulted in the repulping of paper that already has been used. One of the effects is that certain letters which seem to have been more deeply impressed than their fellows survive the process and come to light in unexpected and inconsequent places.

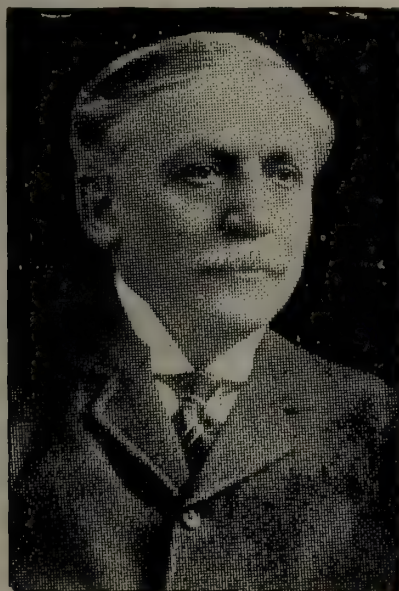
TURNER BROS. ENLARGING PLANT.

"To take care of the rapidly increasing demand for goods of their manufacture (Asbestos products and Balata Belting) Messrs. Turner Bros., Canada Ltd., Montreal, have just completed the erection of a new building, 400 ft long x 70 ft wide, along the waterfront, giving them excellent facilities for shipping by rail and water."

THE LAURENTIDE COMPANY'S REPORT.

The Laurentide Company, Limited, whose annual meeting was held a few days ago presented the shareholders with the best report in its history. Net earnings amounted to \$1,244,283 or equal to 9.78 per cent. on the \$9,600,000 common stock of the company. This compares with \$1,034,606 in 1915 and \$944,958 in 1913,

President George Chahoon, Jr., described the year's operations as a "normal growth of the company's pulp and paper business," and then proceeded to point out the company's plans for further extensions. The announcement was made that the extensions to the sulphite plant now under way would be completed by November, and that these extensions would double the present output of 220,000 pounds of sulphite per 24 hours. He also announced that the ground wood plant had been increased. Shareholders who had expected some announcement regarding the proposed doubling of the news print plant were disappointed, as nothing was said in regard to the subject. Neither was any announcement made, as had been expected, about the distribution of the Laurentide Power stock now in the company's treasury.



MR. C. R. HOSMER,

Vice-President Laurentide Company, Limited.

The power proposition was divorced from the paper company early in the current year, and benefits, which will be cumulative as time goes on, began to appear in the profit and loss statement for the past twelve months. Thus earnings are credited with a new item, returns from investments, to the amount of \$120,818, which presumably stands for the interest which the company received on the power subsidiaries' bonds taken as part reimbursement for the parent company's original outlay on the development.

Just how the segregation affects other items in the balance sheet it would not be easy to say. The company was understood to have received cash as well as bonds from the power company. Bank loans, however, are still high at \$2,195,080, about \$158,000 higher than a year ago in fact. One factor in that might be the continued enlargements of the regular plants of the company. However, the working capital position shows a betterment of about \$500,000, despite the loan increase. Taking strictly current

assets, such as logs, supplies, accounts and bills receivable, etc., there is a total of \$3,321,280, as against \$2,584,656 a year ago, a gain of \$737,000, while current liabilities are \$2,921,701, as against \$2,697,196, a gain of only slightly more than \$224,000. The largest change in current assets is in accounts and bills receivable, which are up nearly \$500,000. The outlook in the paper and pulp business is referred to as encouraging in the President's report, and he also comments with satisfaction on the strong alliance recently made with Shawinigan Power for the operation of the Laurentide Power subsidiary. Since July the latter has been delivering the full amount of power it has contracted to deliver up to the present.

To those who expected larger earnings it should be pointed out that during the past two years the company has been spending large sums for extensions to its sulphite plant and for power purposes. The Company is now in a most favorable position and in a fair way to make a new record in the way of earnings. Comparisons of the principal features of the manufacturing and profit and loss account follow:

	1916.	1915.	1914.
Mill nets	\$1,022,055	\$ 943,272	\$ 829,903
Lumber	101,409	91,333	115,054
Investment	120,818	.....	.....
Total profits	\$1,244,283	\$1,034,606	\$ 944,958
Betterment	59,561	61,799	57,366
Balance	\$1,184,722	\$ 972,806	\$ 887,592
Depreciation reserve.	20,000	20,000	20,000
Balance	\$1,164,722	\$ 952,806	\$ 867,592
Interest	226,899	165,614	156,818
Balance	\$ 937,822	\$ 787,191	\$ 710,774
Dividend	768,000	768,000	576,000
Balance	\$ 169,822	\$ 19,191	\$ 134,774
War tax	20,000	.....	.....
Balance	\$ 149,822	\$ 19,191	\$ 134,774
Interest credit	96,000	192,000	.....
Surplus	\$ 245,822	\$ 211,191	\$ 134,774

A synopsis of the balance sheet for the past two years presents the following comparisons:

Assets.	1916.	1915.
Plant, etc.	\$11,498,589	\$11,560,902
Current assets ..	3,321,280	2,584,656
Forestry	87,357	71,979
Def. charges	6,529	14,691
Totals	\$14,913,761	\$14,232,235

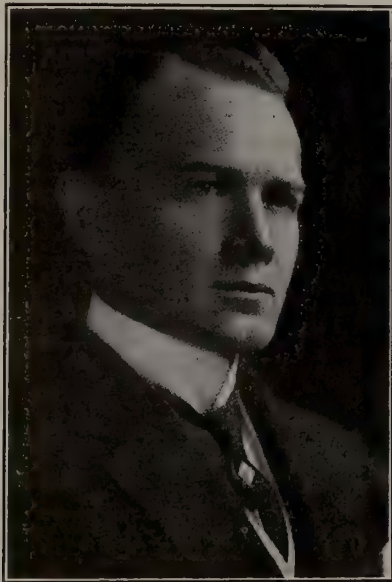
Liabilities.	1916.	1915.
Stock	\$ 9,600,000	\$ 9,600,000
Bonds	706,090	753,806
Current liabilities ..	2,921,705	2,697,199
Reserves	758,520	479,605
Surplus	927,446	701,624
Totals	\$14,913,761	\$14,232,235

The old board of directors was re-elected as follows: President, George Chahoon, Jr.; vice-president, Charles R. Hosmer; directors, R. B. Angus, Sir Thomas Skinner, Edwin Hanson, F. A. Sabbaton, and J. K. L. Ross.

Spanish River Pulp and Paper Statement

The Spanish River Pulp and Paper Mills shareholders have reason to be pleased at the report presented by the directors of the Company.

For the year ending June 30th last the surplus after deduction of all interest charges and charges on account of the funded debt is \$431,291, which is seven per cent. on the outstanding cumulative preferred of \$5,699,100. While these profits show a decided increase over those of the previous year the directors "believe the properties are susceptible of further improvements in both production and profits." This is encouraging news and offers just a ray of hope for the common stock. A summary of the combined revenue statement of the Spanish River Pulp and Paper Mills, Limited, and the Lake Superior Paper Company, Limited, shows:



GEORGE H. MEAD,
President Spanish River Pulp and
Paper Co.

	Spanish Co.	Lake Sup. Co.	Total.
Net revenue	\$879,285	\$1,019,577	\$1,342,330
Brought for	4,763	162,040	268,330
Totals	\$884,048	\$1,181,617	\$1,610,720
Sundry adjustments ..		38,519	.....
		\$1,143,098	

Interest and charges...\$722,013 \$ 770,639 \$ 765,927

Net for distribution ..\$162,040 \$ 372,459 \$ 844,793
Depreciation 104,129 145,172

Net surplus\$162,040 \$ 268,330 \$ 699,621

The accumulated surplus is \$699,621. It might have been more gratifying but for some unusual difficulties that had to be met during the course of the year. The Espanola mill was shut down for two weeks because of floods, and the labor question has been a serious one. As against this may be set the very extraordinary demand for the products of the mill, especial-

ly during the last half of the company's fiscal year. In the course of the year the current assets of the two companies increased by \$2,130,810, the net surplus of current assets being \$3,448,898. Cleaning up current liabilities as indicated by the above has put the properties on a practical basis. Of the total for 1916, \$1,036,400, a sum of \$418,362 is due by the Spanish to the Superior Company, which, deducted from the total, leaves a net current liability of \$618,638, as against substantial current assets of over \$4,000,000. Bank advances amounting to \$740,000, which appeared in last year's statement, have been reduced to \$100,000. Current assets and liabilities stand as follows:

Current Liabilities.

	1916. Spanish River	1916. Lake Superior.
Bank advances	\$ 100,000	.....
Accounts payable	263,850	111,362
Accrued interest	32,120	110,706
Lake Superior	418,362	.....

Totals\$ 814,333 \$ 222,068

Current Assets.

Pulpwood	\$1,049,645	\$ 946,339
Equipment in woods....	169,871	117,810
Stores	269,184	355,356
Mill products	98,979	16,822
Accounts rec.	261,188	294,657
Cash	61,255	110,614
Lumber, etc. ....	.....	2,974
Contract paper	113,217	199,021
Spanish Power Co. ....	.....	418,363

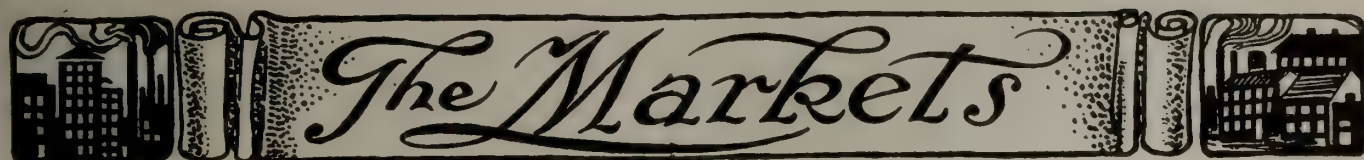
Totals\$2,023,341 \$2,416,956

It will be remembered that during 1915 the interest for two years on bonds and notes was funded and made payable in 1922, and, as announced a week or so ago, the ordinary bond interest payments will be resumed from now on. There remains as deferred interest a sum of \$1,356,429, due in 1922. At the present rate of earnings it would appear that the companies will be in a position to take care of this at that time and afterwards may be in a position to do something for the holders of the cumulative preferred. If the hopes of the directors materialize it may be possible to settle with the bondholders earlier than agreed upon, and this would, of course, bring the realization of the hopes of the preferred holders somewhat nearer.

The annual meeting of the shareholders of the Spanish River Pulp & Paper Mills, Limited, will be held at Toronto, Thursday September 28th, at 12:15. A special meeting has been called for 12 o'clock the same day to confirm a by-law authorizing the company to hold meetings of its board of directors outside the province of Ontario.

U.S. IMPORTS OF PULP.

United States in year to June 30, 1916, imported 1,135,000,000 pounds of pulp, of which nearly 70 per cent. came from Canada and most of the remaining 30 per cent. from Norway and Sweden. Pulp importations were 180,000,000 pounds less than in previous year, but amount shipped from Canada increased 130,000,000 pounds.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The market keeps up its uncertainty of supplies and firmness of prices in all lines and fall trade is starting in with a rush. There seems to be no diminution of orders, news print stock are low and business is being turned down on all sides. Prices remain stiff in Canada, but for some contracts on the other side of the border it is reported that fancy figures are being obtained. The market is being scoured for news. The reports presented by leading companies, whose financial year has just closed, give some indication of prevailing active conditions although the mills have not yet been able to "cash in" on present high prices, owing to contracts being carried out at old quotations. It is expected that for the coming year their earnings will top all records in the industry.

In the book and writing arena, the same urgent demand exists and some mills would not grieve very much if they did not see another order until the beginning of the new year. It would give them a chance to catch up. One Canadian concern, which have been making wrapping and hanging papers, are converting their output into book and writing, and another leading company have decided to install a new machine. It is expected that two other machines will be in operation by the beginning of the year and this will relieve the situation somewhat. It is difficult to get some school publications such as drawing books, etc., owing to the scarcity of paper and deliveries are slow. The cheaper grades have been advanced a cent in price, although there are practically no quotations existing. It all depends on the quantity wanted, the weight, when delivery is to be made, combined with the understanding that the raw stock can be secured. Quotations are then open, subject to the figure prevailing at the period of shipment.

In the wrapping paper line, fibre has recently advanced one cent and No. 1 manila, three quarters of a cent, and the end is not yet. It is understood that another increase is on the way for all kinds of wrapping papers and also for kraft which may touch the ten cent mark in car load lots before the close of 1916. The underlying causes of all the advances are primarily the augmented cost of pulp wood, the scarcity of and high wages for labor and the abnormal demand for all kinds of pulp.

Ground wood pulp is now getting very scarce and there are more inquiries than there have been for months. As high as twenty-three dollars is being offered for No. 1, at the mill and then only limited quantities can be secured. It is not so many months ago that ground wood pulp delivered did not bring any higher figure at U. S. delivery points, freight paid, than it now commands at the mills. It is maintained by some that as high as thirty dollars will be secured f. o. b. mill before the end of the year.

In unbleached sulphite the situation is still acute and prices are aviating and may go to one hundred and twenty-five before the snow flies. Of course, there are several mills under construction, but they will not be able to relieve the situation for some months. A leading company which has been considering the erection of a thirty ton sulphite mill, estimates that if present prices could be obtained for a year, they could erect a thirty ton plant, even at the present high figure for steel and equipment, and have the undertaking paid for out of the profits of the first twelve months operation. No contracts are being renewed just at present, both consumers and sellers holding aloof until later when the outlook for next year can be more accurately gauged. Prices on contract are likely to be considerably more than double of what they were a year ago.

There has been a heavy advance on all kinds of tissue papers, first because of the unprecedented demand and to stop certain firms from placing orders. The mills now have more than they can do and deliveries are late while customers are clamoring. One firm is considering the advisability of cancelling certain contracts and paying the customers a rebate in order to get relief from the onslaught of business. It is likely that more machines will be added within the next few months.

The discount on paper bags has been decreased lately in keeping with affairs generally. There has been a slight advance on toilet papers while paper towels have gone up ten per cent. and paper napkins twenty per cent. The air is rife with rumors that an export duty may be placed on pulp wood by the Federal Government, and also the possibility of the authorities placing an embargo on chemical pulp to any points outside the British Empire, but these reports have to be taken at what they are worth.

The advent of fall has created a stronger demand for all kinds of paper and an added impetus is being given to the trade if such a thing is possible. Just how long the present abnormal prices will prevail in all lines is creating a deal of interest among students of the market situation. It depends on how conditions are viewed, whether as a buyer or seller. The latter is on the inside looking out and the former is on the outside looking in—far into the future. Will the skyrocket quotations collapse some day like a house of cards,—fall over in a night as it were.

There are many prophets in the pulp and paper trade and no two scarcely agree. It is declared by some who claim to be "in the know" that paper prices will never revert to their former level and that mills for many years have been selling their product at too low a cost and are now coming into their own. They point to the fact that, even if the war were to terminate suddenly, the period of re-adjustment would not be completed for a long time. As the majority of Canadian mills have now adopted the three tour system and advanced wages from twenty per cent. up owing to the scarcity of help, it will not be possible to obtain sufficient labor

as cheap as in the past and, therefore, producers will have to get more for their goods, no matter how plentiful supplies become. This is one view. The other is that there has been an artificiality about everything connected with the trade, founded on a war time basis and by the abnormal demand. Such a fictitious state of affairs, they predict, is unlikely to continue for any great period and the bottom will fall out of pulp and paper aesonautics the same as it has in the real estate line in the west and in suburban property. Within a year, one leading manager says, prices on all lines of pulp and paper will drop as low as they were before the war.

In the rag and paper stock line, news and mixed papers are in strong requisition. Hard and soft shavings are scarce and prices are going up. There is a good demand for roofing stock. The board mills are now in the market for fall supplies and are buying quite freely and paying good prices.

The following are the Toronto prices:

Paper.

News (rolls) \$2.25 to \$2.40, at mill, in carload lots.	
News sheets), \$2.65 to \$2.75, at mill, in carload lots.	
Book papers (carload), No. 3, \$6.00.	
Book papers (ton lots), No. 3, 6.00c to 7.00c.	
Book papers (carload), No. 2, 7.50c to 8.00c.	
Book papers (ton lots), No. 2, 7.75c to 8.50c	
Book papers (carload), No. 1, 8.25c to 9.00c.	
Book papers (ton lots), No. 1, 8.25c to 9.00c.	
Sulphite bonds, 10 cents up.	
Writings, 8½ cents up.	
Grey Browns,	\$3.75 to \$4.25
Fibre,	\$6.50 to \$7.50
Manila, No. 1	\$7.00 to \$8.00
Manila, B.,	\$4.50 to \$5.10
Unglazed Kraft.	\$8.50 to \$9.50
Glazed Kraft,	\$9.00 to 10.00
Tissues, bleached, . . . . .	.90c to \$1.50
Tissues	\$1.60 to \$2.30
Tissues, (manila or white sulphite) . . .	\$1.20 to \$1.60
Tissues, cap. . . . .	.80c to \$1.15
Natural, greaseproof, . . . . .	.13c to 16c
Bleached grease-proof . . . . .	.20c to 25c
Drug papers, whites and tints, . . . . .	.9c
Paper bags, Manila . . . . .	.30% discount.
Paper bags, kraft, . . . . .	.15% discount.
Confectionery bags, . . . . .	.15% discount.

Pulp.

F.O.B. Mill.

Ground woodpulp	\$22.00 to \$24.00
Easy Bleaching Sulphite	5½c to 5¾c
Sulphite, news grade	4½c to 5c
Sulphite (bleached)	7½c to 8c
Sulphate	5c to 6c

Paper Stock.

No. 1 hard shavings	\$4.00
No. 1 soft white shavings	\$3.40
No. 1 mixed shavings . . . . .	.70c
White blanks.	\$1.15
Heavy ledger stock.	\$2.25
No. 2 book stock	\$1.00
No. 1 book stock	\$1.50
No. 1. Manila envelope cuttings	\$2.00
No. 1 print Manilas.	\$1.10
Folded news	72½

Over issues	72½
No. 1 clean mixed paper. . . . .	.65c
Old white cotton	\$4.50
Thirds and blue	\$2.75
No. 1 white shirt cuttings	\$7.25
Black overall cuttings	\$2.75
New light flannelettes	\$5.50
Ordinary satinets and flock.	\$2.20
Tailor Rags	\$2.00

MONTREAL MARKETS.

Markets for all lines of pulp and paper continue to exhibit strength while there is every indication that further advances will be registered in the near future. As a matter of fact everything points to an upward trend. Consumers of paper in both the Eastern and Western, Canada as well as in the United States are complaining of a shortage of news print and of steadily advancing prices. All the factors entering into the manufacture of pulp and paper are showing advances in price so there is nothing for the manufacturers to do but to register increases.

News in rolls is quoted at \$2.25 to \$2.40, at the mill, in carload lots from either Toronto or Montreal markets, while for small orders the price is \$2.50 up.

Ream news is quoted at from \$2.40 to \$2.50 per 100 pounds at the mill for large orders and \$3.00 up, for small orders.

While the changes noted below are in some cases only nominal there is every indication that real advances will be registered inside the next few weeks.

Quotations in Montreal are as follows:

Book—News—Writing and Posters.

Roll News, \$2.25 to \$2.40 per 100 pounds at mill for large orders; \$2.50 up, for small orders.
Ream News, \$2.40 to \$2.50 per 100 pounds at mill for large orders; \$3.00 up for small orders.
No. 1 Book, 7.50 to 8.25.
No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.
No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.
Writings, 6.95 to 10.
Writing Manila, 6.95.
Cover papers, 11 to 14½c, according to colors wanted.
Colored Poster, 6½ to 7½c.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs. . .	3.40	3.65	3.90

NEW YORK MARKETS.

New York, Sept. 14, 1916—What will eventually happen to the ground market is a question which is now occupying much of the time of many of the members of the trade. While the ground wood situation may not be considered as severe as the sulphite, still matters are gradually growing worse and there are many possibilities which bode no good for the industry. It was fortunate that the early part of the summer was not very dry and that the up-State sections were blessed with considerable heavy rainfalls, otherwise the market would now be in a very acute situation. As it is, however, the water supplies are not any too good and a number of machines are said to be unable to be kept in continuous operation. At such a time as this, every bit of tonnage taken out of the market in this way is very keenly felt. For the future, absolutely no relief is in sight, that is, judging from the following calculation. The news mills are operating at capacity and are even considering the question of getting legal sanction to allow them to keep their machines going on Sunday. This means that these manufacturers are using all of the ground wood that they can possibly use. Because of the shortage of sulphite and because of the very high premium at which it is held, it is being replaced, wherever possible, with ground wood pulp. This fact has meant a great increase in the consumption of ground wood at a time when it can least be afforded. Some of the pulp mills have sold their entire production for the year and are unable to offer anything whatsoever for delivery in 1916. Others have a little to offer but are holding for the top market price. Present quotations range from \$22.00, f.o.b. mill and upward. It is understood that the mills through the West are able to get more for their pulp than is being obtained in the vicinity of New York.

There were rumors current early last week that a change was about to be experienced in the sulphite market and that prices would soon be lowered, but these rumors were without foundation and did not even show indications of materializing. The fact is that those well acquainted with what is going on feel that nothing short of a miracle can change the course of the market within the next few months. If anything, conditions will become more severe than they are. While the volume of the imports is considerably better than it was a few months ago, still it is far from being sufficient to warrant any hope that conditions would ease up. From Sweden come advices that the demand from the European continent continues rather strong and that the Scandinavians are able to dispose of their product abroad at prices much higher than those being paid in the United States. Germany is buying heavily and seems to have an option on a large portion of the Swedish product. Relations between the English and Swedish government are said to have shown a tendency to improve and a number of pulp shipments to Great Britain have been reported. Thus far, there has been some delay in sending pulp from Sweden to the British Isles, because of the pulp embargoes. In fact, it is said that large quantities of pulp, bought by English paper makers is being held in Scandinavian warehouses, awaiting shipment. The news that these lots of pulp were being held in store was used as a bear that there were surplus stocks available. But such is not the case. Foreign bleached is holding up

to 8½ to 10 cents and can be had only in limited quantities. Domestic bleached is quoted at 6¾ to 7 cents. The mills are operating at capacity to meet a good demand. While it is true that the situation in bleaching powder has improved and that it is now not much of a hindrance to the manufacturers, there are still a number of difficulties being experienced in producing bleached sulphite. Easy bleaching is being held at 6½ cents. No. 1 strong unbleached, foreign, is quoted at 5 to 5½ cents. Domestic bleached can be had at 4 cents. Krafts are worse than ever, so far as added supply is concerned. True, the mills are all operating at capacity, but they are either making for contract or are consuming their product themselves, for there is no more stock available on the market. Prices are nominal at 5½ to 6 cents—and more if it is possible to get it.

The rag market is moving along in a slow, but regular fashion. The high prices which the stock men had predicated some time ago, do not appear very likely. For, while the mills are working at capacity and are consuming a great deal of stock, they appear to be buying in such a manner as to keep the market stable. New rags are going fairly well at about 8¾ cents for the good new white shirt cuttings. Old whites are selling at about 6 cents for the better grades. House soiled whites are being held at about 4¼ cents; street soiled whites, at 3½ cents; thirds and blues, at 3¾ cents, black stocking at 3¾ cents. Roofing stock is still holding up to 2¼ cents.

Little life is being manifested in the bagging market. Despite the limited quantities of stock available, the mills are not anxious to buy heavily and are just getting what they need and at prices not considered exorbitant. It is understood that there are possibilities that the English embargo will soon be repealed, which may have the effect of bearing the market. Gunny is being held at 3¼ to 3¾ cents; bright bagging, at 3½ cents; sound bagging, at 3¼ cents; mixed bagging, at 2¼ cents. Manila rope is holding to 4½ to 5 cents.

Reports from the waste paper market indicate that there is considerable activity current in most of the grades. Soft and hard shavings are selling well—hard shavings, at 3¾ to 4¼ cents, and soft shavings, at 3½ to 3¾ cents. Solid book ledger is going for 2¼ cents and higher and plain ledger stock is quoted at 1¾ to 2 cents. Mixed papers are held at 60 to 65 cents and krafts are active at 2¾ to 3 cents.

Buyers of paper are not experiencing much relief from the conditions which have been current in the paper market for some time. When it is realized that a number of the manufacturers are working on orders received as much as six months ago, and still have their books well filled, it can be understood that there has been little let-up in the demand for paper. A number of jobbers have tried to spread reports that conditions were bringing about a slump and that prices were already sagging. But this is not true. However, it is a fact that some jobbers, being well stocked with paper bought when prices were much more reasonable, have been selling their surplus for prices less than those now being asked by the mills.

News print conditions are as acute as they have been at any time during the past few months. All of the efforts of the publishers to curtail consumption are of little or no avail. The demand continues as great as ever. However, the mills are unable to take

care of all that is needed and are doing whatever they can to keep the newspapers supplied and prevent them from suspending publication. Wrapping papers are in good demand, but hard to obtain. The mills are all working at capacity, but are unable to promise delivery and a good many will not even accept new business. Tissues have not changed and are almost unobtainable. It is doubtful whether one can obtain a good white tissue for less than \$1 a ream.—R. W. Jolly.

Uncle Sam to Turn Paper Maker

Uncle Sam apparently is looking for trouble so has about decided to find it in the paper making business. A Government-owned pulp and paper mill to manufacture such paper as is needed by the Government Printing Office has been proposed in a bill introduced in the United States Congress by Representative Tavenner of Illinois. The objects sought by the bill are not dissimilar in purpose from the objects sought by the establishment of a Government armor plate plant and the projected Government nitrate plant. Mr. Tavenner says he intends to make every effort to have the bill reported favorably, at an early date, from the Committee on Printing, of which he is a member. The bill authorizes an appropriation of \$1,000,000 for the construction of a Government paper mill.

The bill requires that the mill shall be located with special reference to utilization of the forests, minerals, water power and other resources of the public lands, and the President is authorized to set aside such site as may be selected on the public lands for the purpose. The bill further directs that the Secretary of Agriculture and the Secretary of Commerce shall assist the public printer in the construction and operation of the mill, which insures adequate expert and technical skill for the new enterprise, inasmuch as the Department of Agriculture and the Department of Commerce have already done considerable work along the lines proposed by the Tavenner bill.

Mr. Tavenner stated that his principal purposes in urging the Government manufacture of paper are as follows:

"First, to provide an adequate supply of print paper at all times and at a fair price, thus protecting the Government from the grasping combines that now refuse to furnish necessary paper for the operations of the Government except at exorbitant and non-competitive prices.

"Second, to obtain for newspaper publishers and the printing trade in general definite information as to the cost of the manufacture of print paper, so as to likewise protect them from excessive charges by unscrupulous manufacturers who seek, under abnormal conditions, to advance their own selfish interests, entirely regardless of the public service performed by newspaper and other publishers in the distribution of necessary information to the people.

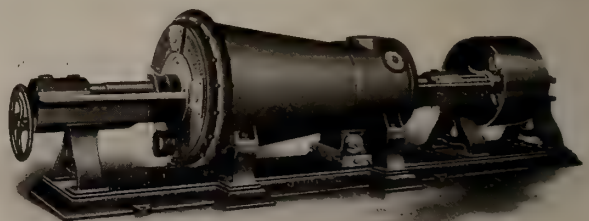
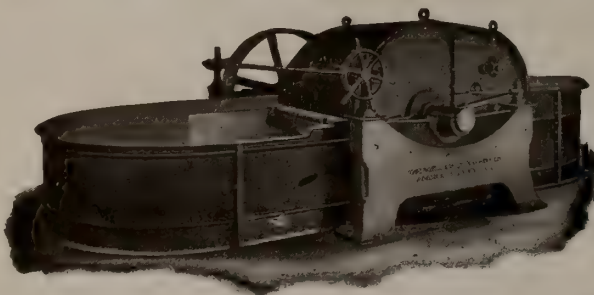
"Third, to utilize the forests and water power on the public lands in the economical manufacture of paper for the benefit of the Government, and to prevent further waste of these resources which the paper interests are seeking to have withheld from competition with their monopolistic ownership of wood pulp and power sites.

"Fourth, to furnish adequate and practical means for the development of the manufacture of paper from corn and cotton stalks, and similar agricultural products, which would be of vast benefit to the farmers of this country in providing a profitable market for a large portion of their products which now go to waste. The use of new fibers, other than wood, would also be of inestimable value in the conservation of the forests of the United States, the destruction of which is largely chargeable to their extravagant use in the manufacture of paper."

The bill provides that if the public printer shall have a surplus on hand after supplying the needs of the Government, such surplus shall be sold by him at not less than cost. It is believed this surplus product may have some effect in preventing exorbitant prices for paper in the future. That the public printer's price per ton may represent an adequate charge for the paper the Secretary of the Interior and the Secretary of Agriculture are directed to sell to him the necessary raw materials obtained from the public lands "at a fair price" so that all elements of cost will enter into the report submitted by the public printer as to the operation of his plant.

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George Little, of Xenia, Ohio, acting for the men who are to erect a new chip board plan at Fort Madison, Ia., has purchased the block of ground north of the square secured for the mill building.

Tenders for Pulpwood and Pine Limit.

Tenders will be received by the undersigned up to and including the 1st day of December next for the right to cut pulpwood and pine timber on a certain area situated on the Pic River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet, board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario—the paper mill to be erected when directed by the Minister of Lands, Forests and Mines.

Parties making tender will be required to deposit with their tender a marked cheque, payable to the Honorable the Treasurer of the Province of Ontario, for twenty-five thousand dollars (\$25,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$25,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

The highest or any tender not necessarily accepted. For particulars as to description of territory, capital to be invested, etc., apply to the undersigned,


G. H. FERGUSON,

Minister of Lands, Forests and Mines.

Toronto, August 28th, 1916.

N.B.—No unauthorized publication of this notice will be paid for.

Sept. 15, Oct. 1, 15, Nov. 1, 15.



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Montreal and Toronto

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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Acid Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Air Compressors:**
Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Barkers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
- Bearings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Beaters:**
Bertrams Ltd., Edinburgh, Scotland.
Clafin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Belted:**
Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glasco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.
- Belt Conveyors:**
The Jeffrey Mfg. Co., Montreal Que.
- Bleaching Powders:**
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.
- Bleach Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
- Blowers:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.
- Boilers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Boilers—Water Tube:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Brass Wire Cloth, Fourdrinier Wires:**
Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
- Cable Conveyors:**
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Calendar Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.
- Carriers:**
Northern Crane Works, Walkerville, Ont.
- Cars, Dump and Flat**
Fraser, W., Montreal
Sessenwein Bros., Montreal
- Castings:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.
- Chain Crane:**
Northern Crane Works, Walkerville, Ont.
- Chain Blocks:**
The Jeffrey Mfg. Co., Montreal Que.
- Chain Conveyors:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chain Drives (Silent and Steel Roller):**
Jones and Glasco, St. Nicholas Building, Montreal.
- Change Speed Gears:**
Jones and Glasco, St. Nicholas Building, Montreal.
- Chemicals, Colors, Etc.:**
Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chimneys:**
Canadian Kellogg Co. Ltd., New York.
- China Clay:**
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chippers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Disintegrators:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glasco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Coal and Ash Conveyers:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Condensers—Barometric:**
Canadian Kellogg Co. Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Conveying Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls:**
Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
- Couplings:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glasco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cranes:**
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Electric:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Cranes—Hand Power:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cranes—Overhead Travelling:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cut Gears:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glasco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Cylinders:**
Bertrams, Ltd., Edinburgh, Scotland.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Covers:**
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Moulds:**
Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Dandy Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.
- Diffusers:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Digesters:**
Canadian Kellogg Co. Ltd., New York.
- Digester Lining:**
Advance Engineering Co., Ltd., Toronto, Ont.
Panzi Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Dryers:**
Bertrams, Ltd., Edinburgh, Scotland.
- Engines:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Evaporators:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
- Exhausters:**
The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery:**
Process Engineers, Ltd., Montreal, Canada.
- Exporters:**
Parsons Trading Co., New York, N.Y.
- Felts:**
Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Ont.

MILL SUPPLIES---Continued

- Filters:**
Darling Bros., Montreal, P. Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P. Q.
- Friction Hoists:**
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Gauges:**
Darling Bros., Montreal, P. Q.
- Gears:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Grate Bars:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Grinders:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Hangers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Hand Power:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Heaters:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Helicoid Conveyor:**
H. W. Caldwell & Son Co., Chicago.
- Hoists:**
Darling Bros., Montreal, P. Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.
- Iron Castings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Iron Pulleys:**
H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Jordan Engines:**
Jones, E. D. & Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
- Knives:**
Disston, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hay, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Knives, Paper Cutting:**
Galt Knife Co., Ltd., Galt, Ont.
- Kollergangs:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Locomotives:**
Montreal Locomotive Works, Ltd., Montreal.
- Locomotives, Re-built:**
Sessenwein Bros., Montreal
Fraser, W., Montreal
- Paints:**
Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.
- Paper Stock, Etc.:**
Pullan, E., 490 Adelaide Street W., Toronto, Canada.
- Paper and Pulp Machinery:**
Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Downingtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P. Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmsley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. F., Peterboro, Canada.
- Paper Tester:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. Elias Wilkinson, Toronto, Ont.
- Penstocks:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Pillow Blocks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Piping—High Pressure:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Hydraulic:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Power Plant:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Welded:**
Canadian Kellogg Co. Ltd., New York.
- Pneumatic Thickeners:**
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
- Presses:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Boomer & Boschert Press Co., Montreal, Canada.
- Press Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulleys:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Pulp Stones:**
Lombard & Co., Boston, Mass.
Stancliffe Estates Co., Ltd., Darley Dale, England.
- Pumps:**
Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P. Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Radial Brick:**
Canadian Kellogg Co. Ltd., New York.
- Railway Equipment—Scrap:**
Sessenwein Bros., Montreal
- Rails—re-laying:**
Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal.
- Refiners:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Reinforced Concrete:**
Canadian Kellogg Co. Ltd., New York.
- Rope, Cotton and Manila:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Rope Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Rosin Size:**
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Rosin Size Boilers and Dissolvers:**
Process Engineers, Ltd., Montreal, Canada.
- Rotary Sulphur Furnaces:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Safes:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Save-Alls:**
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Screen Plates:**
Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.
- Screens:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal, Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. F., Peterboro, Canada.
- Shafting:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Shredders:**
The Jeffrey Mfg. Co., Montreal, Que.
- Slitters and Re-Winders:**
Bertrams, Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Smoke Stacks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

MILL SUPPLIES---Continued

Soluble Blue:

Brandram-Henderson Ltd., Montreal.

Spiral Conveyor:

The Watrous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Montreal, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Montreal, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Stacks:

Canadian Kellogg Co. Ltd., New York.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Penmans, Ltd., St. Hyacinthe, Canada.

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Tanks—Welded:

Canadian Kellogg Co. Ltd., New York

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Jones & Glassco, Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Travelling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurttemberg, Germany

Valts and Valt Doors:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R., Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City.

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfound-

land.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex. & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge Paper Co Ltd.....	60
Beveridge, Jas., Chatham, N. B.....	62
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6
Bowater, W. V. & Sons, Ltd.....	60
Brandram-Henderson Ltd.....	49
The Bronson Company.....	

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	3
Canadian Fairbanks-Morse Co., Ltd.....	13
Canadian Kellogg Company.....	6
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	
Capital Wire Cloth Mfg. Co., Ltd.....	60
Carthage Machine Co.....	61
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	
Christie George, Ltd.....	62
Churchill & Sim.....	
Claflin Engineering Co.....	49
Crossley, T. L.....	65

D

Darling Bros., Ltd.....	13
DeCew, J. A.....	64
Dean & Son.....	8
Disston, H. & Sons, Ltd.....	
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	11
Ferguson, H. S.....	64
J. Ford & Company.....	
Fraser, W.....	65

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	
Glens Falls Machine Works.....	
Goldie and McCulloch Co., Limited.....	

Groot, H. de

H

Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	14
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6

K

Kimball H. S.....	46
Klipstein, A. & Co., Ltd.....	7

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	61

M

Mackinnon, Holmes & Co.....	
Main Belting Co. of Canada Ltd.....	6
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15

N

Noble & Wood Machine Co.....	49
Northern Crane Works, Ltd.....	
Norwood Engineering Co. of Can. Ltd.....	13

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	8

S

Sadler and Haworth.....	50
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jas. W.....	65
Scott, Ernest & Co.....	62
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spielmann Agencies.....	65
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	62
Ticonderoga Machine Works.....	6

U

Union Screen Plate Co. of Canada, Ltd.....	
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	60
Voith, J. M.....	12

W

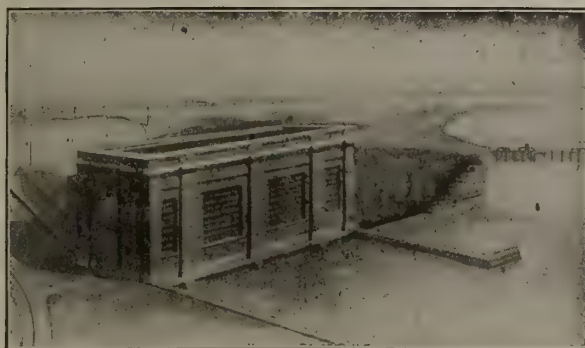
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	
Wilson-Paterson Co.....	



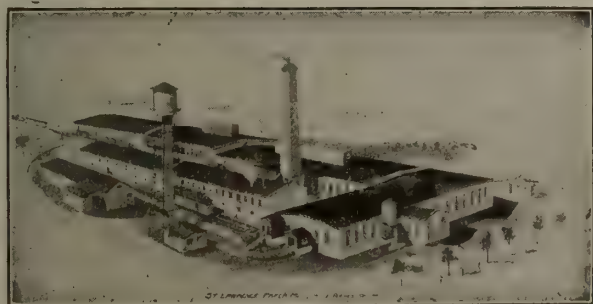
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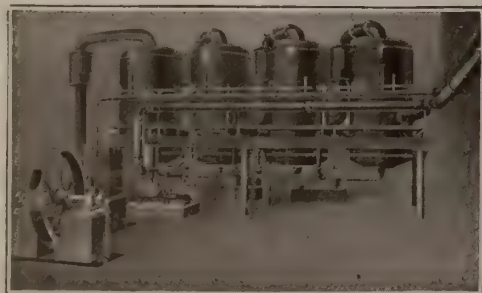
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BIG ERA OF PROGRESS REPRESENTED
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WATER POWERS OF QUEBEC
PROVINCE.

THE USE OF BARK FOR PAPER
SPECIALTIES.

NEWS

MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

Bertrams Limited

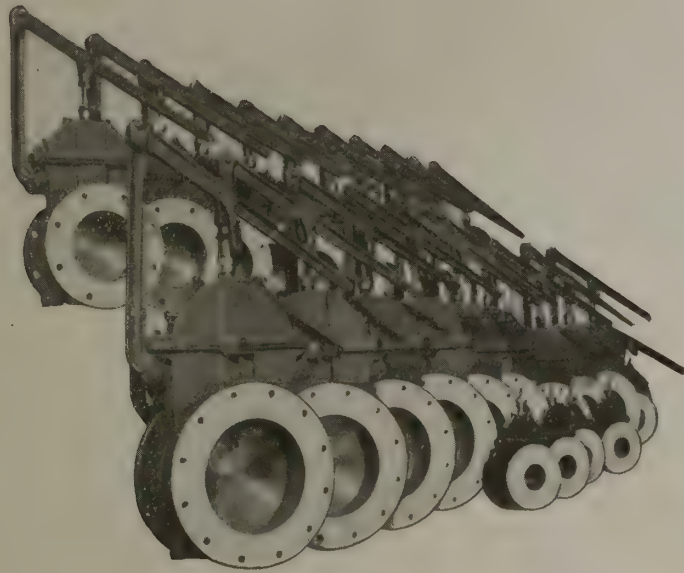


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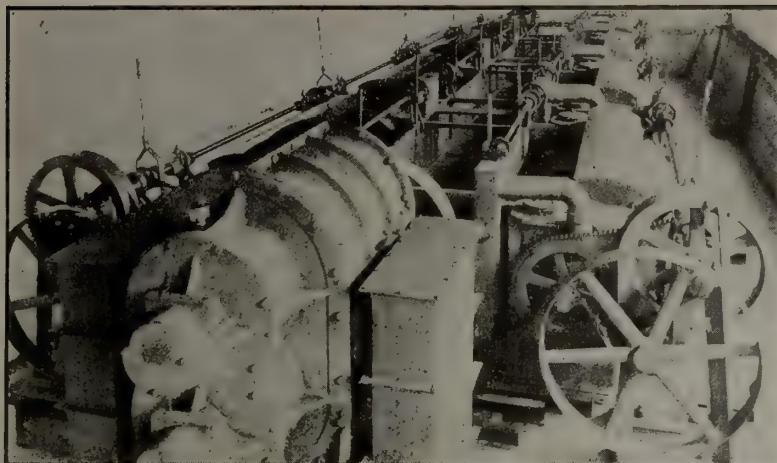
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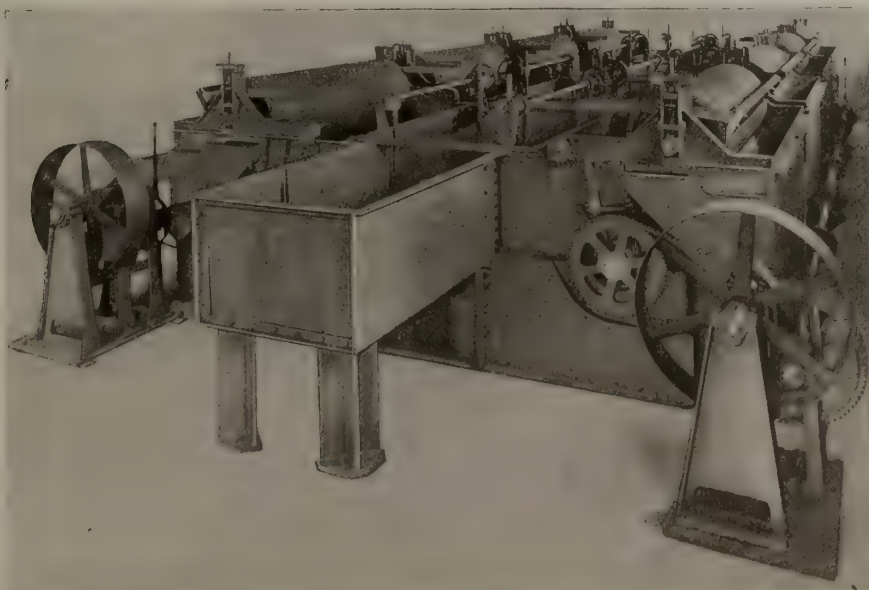
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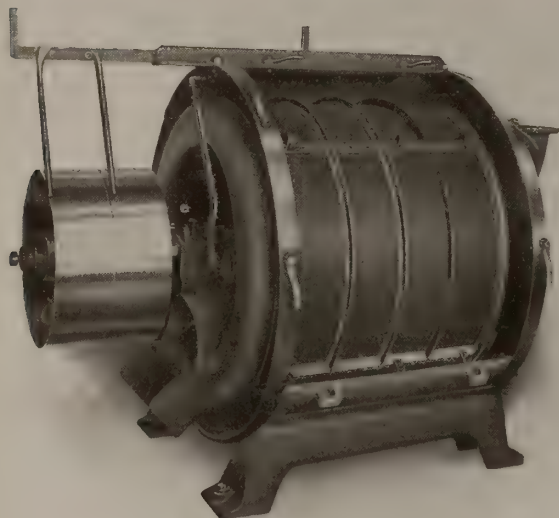
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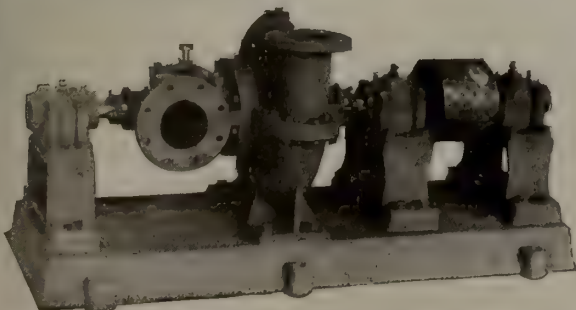
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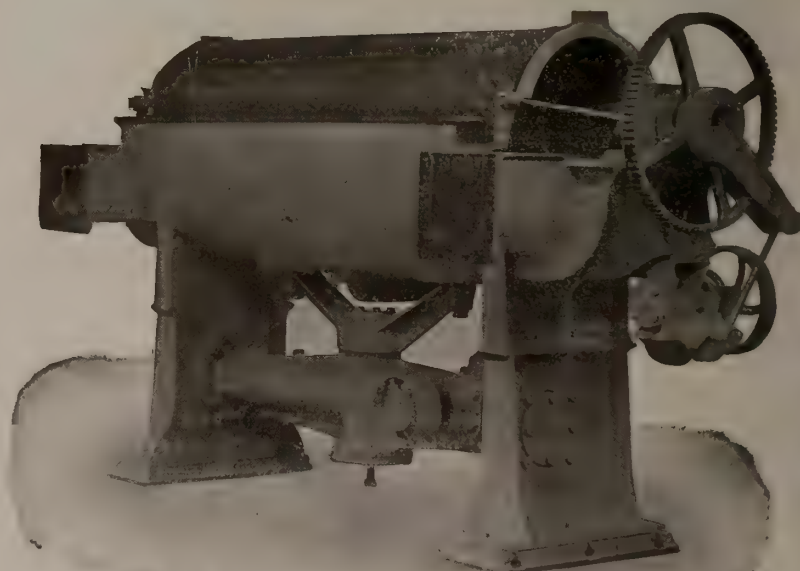
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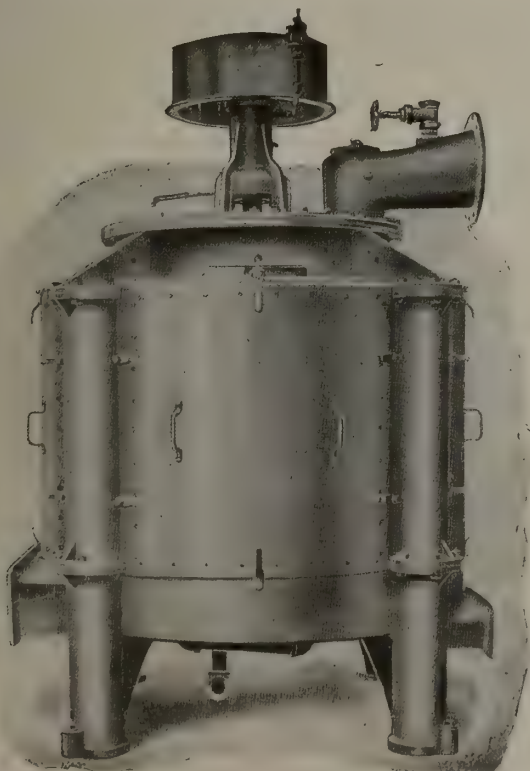
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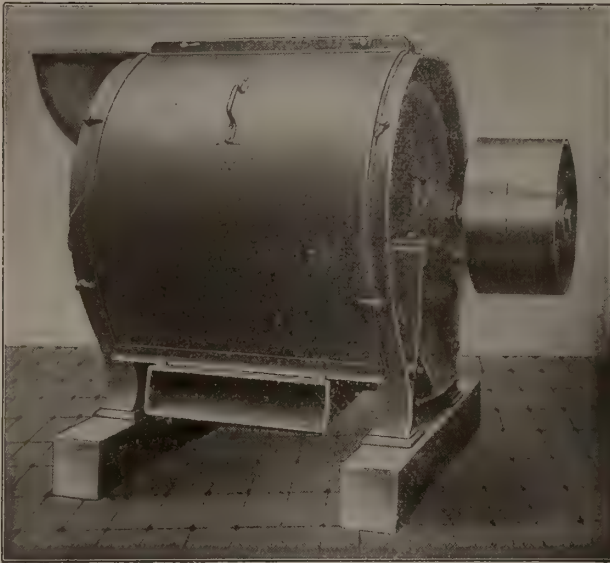
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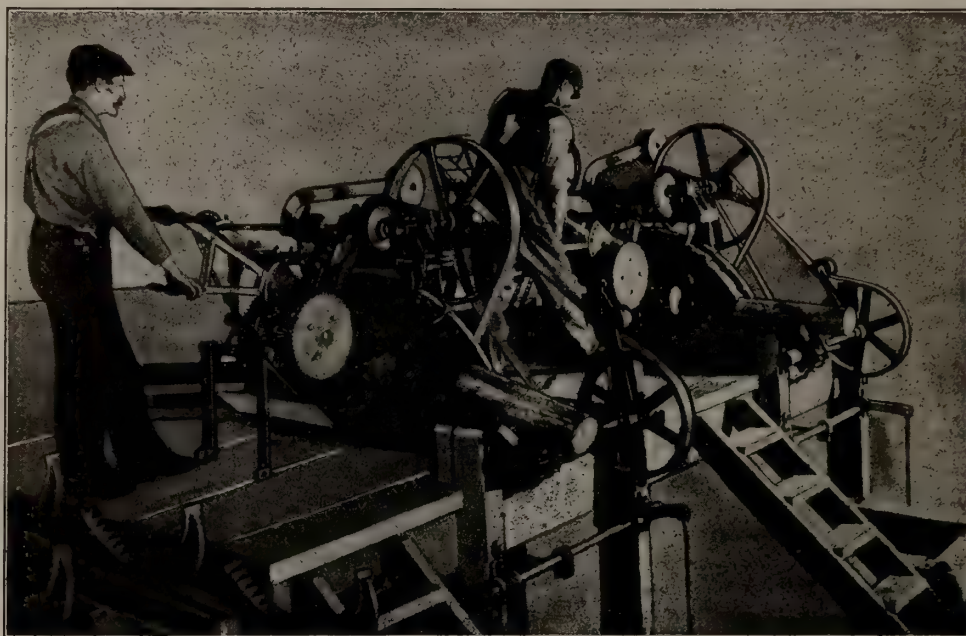
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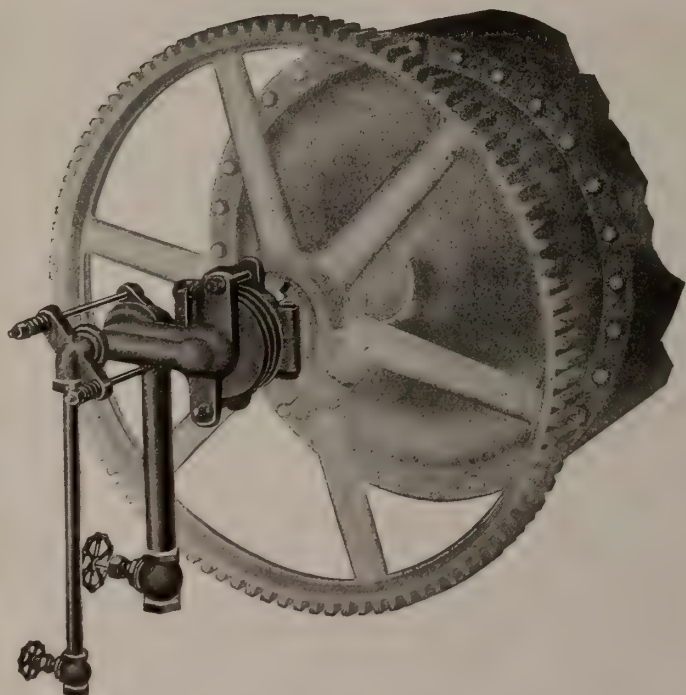
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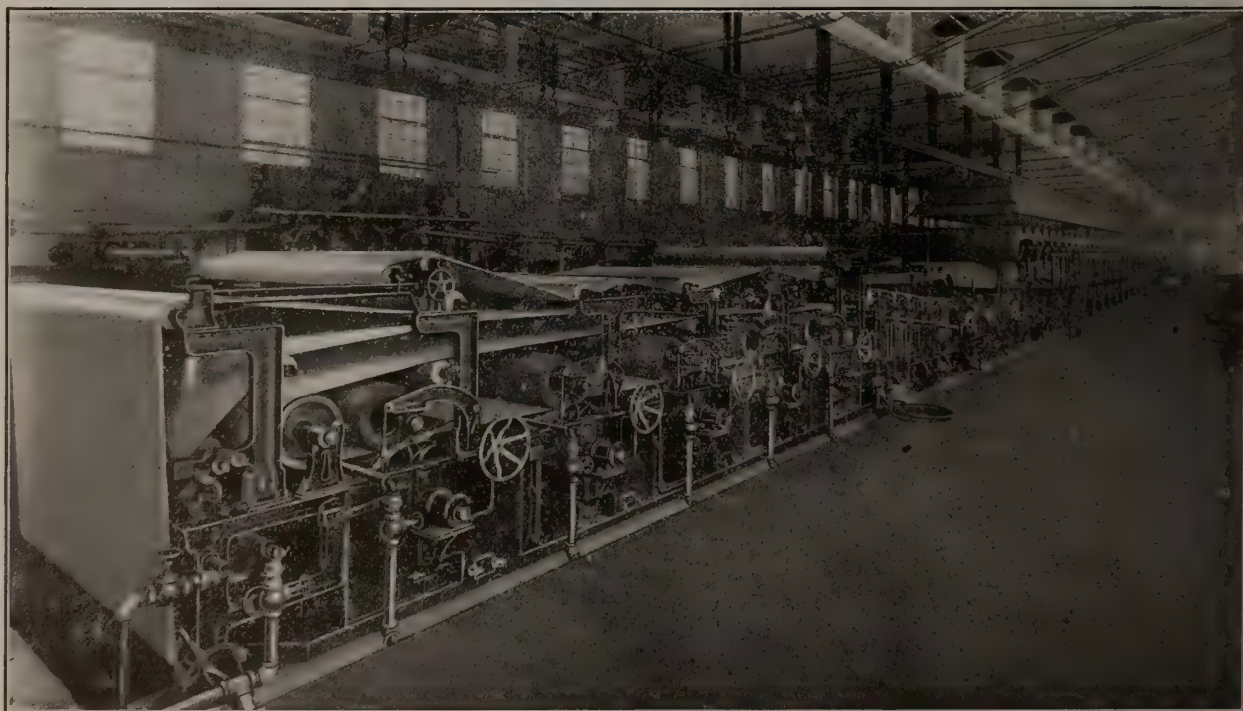
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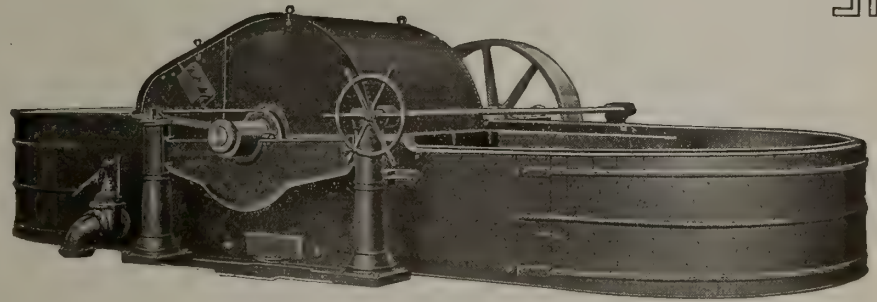
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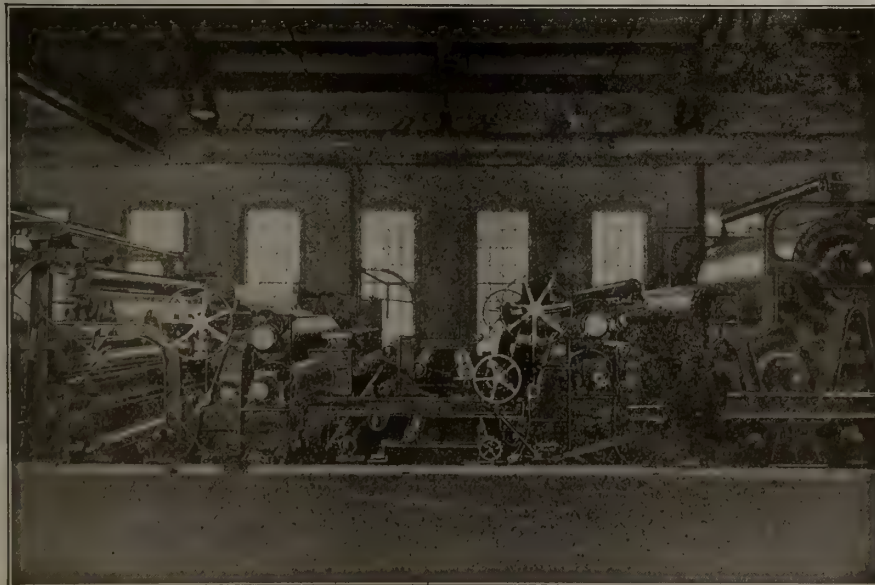
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A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
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Published on the 1st and 15th of each month. Changes in advertisements should be in Publishers' hands ten days before date of issue. The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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VOL. XIII.

MONTREAL, OCTOBER 1, 1916

No. 19

AFTER-THE-WAR PROBLEMS.

At the present time the energies of the best men and organizations in the Empire are turned towards the war. This is as it should be. It is the one supremely important undertaking and until Prussian militarism has been crushed and beaten everything else must take a secondary place.

There is, however, a phase of the war, or a result of its toll, that we must take into our serious consideration. This is the returned soldier. They are now coming back in increasingly large numbers and too often are left uncared for by the Government and the large employers of labor. We give them a cheer as they step from boat or train and then promptly forget them and turn to our money-making with a Pharisaical air. We forget that we are permitted to pursue our regular callings without let or hindrance because these soldiers and thousands of others like them have stood between us and the Huns. We have been far from war and strife and many of us have profited from the shed blood of our fallen friends. Surely it is not too much to ask employers of labor to give the returned soldier the first chance at a vacant job or even to replace a shirker by one of these men who has done his "bit." Pulp and paper men have gone over in large numbers. Those of them who return should get their jobs back and places made for as many others as possible.

The larger question of after-the-war employment is a serious one. In a few months, or a year at most, some hundreds of thousands of soldiers will return and seek to adjust themselves to our social, industrial and commercial activities. It would be well for the Governments, Federal and Provincial, for municipalities, for employers of labor, and all interested in the welfare

of our heroes to plan for their home-coming. It will be too late after they arrive. We need to exercise some forethought and have work ready and waiting for them.

The United States built the Lincoln Highway to commemorate their great Civil War, but built it fifty years after the conflict ceased. Why cannot Canada build a great national highway to commemorate the part played by her brave sons? Such an undertaking would provide work for tens of thousands and at the same time prove a profitable venture. The economic value of good roads is too well-known to call for comment.

A century ago thousands of British soldiers returned from the Napoleonic wars and found themselves out of touch with the life of the nation and in need of work. They were set at building roads and laid the foundation of the splendid highways for which Britain is so justly famous. A similar policy might well be adopted in Canada and other public works like the rebuilding of the Parliament buildings held over until after the war when labor would be cheaper, building materials less costly and when there will be many men in need of work.

There are many other problems which will face us after the war, such as trade and tariffs, the high cost of living, immigration and others but all sink into insignificance in comparison with the soldier and his job. That comes first. The man who saved the Empire, who stood between your home and the heartless Hun, who permitted you to carry on your work unmolested and who in many cases gave up a comfortable place to a shirker—he must be cared for. It is not charity, but justice. He does not ask for favors. It is his Right—and our Duty.

THE SULPHITE SITUATION.

The chemical pulp market is furnishing much food for discussion among paper makers and pulp dealers. The abnormal advance in the price of sulphite pulp has been one of the outstanding features of a paper market which made new high records with each succeeding week. A gain in price from thirty-five to forty dollars a ton a few months ago to three times that figure to-day is little short of spectacular.

The advance is largely due to chaotic trade conditions arising out of the war. In pre-war times England secured ninety per cent of her pulp from Sweden but when that country put an embargo on her exports of pulp to Britain the latter country was forced to look to Canada and Norway for her supplies. In addition the United States has been a heavy importer of pulp from Canada taking over 168,000 tons in 1916 as compared with 68,000 tons in 1914. From Sweden the United States imported 248,000 tons in 1914, but only 148,000 tons in 1916. Domestic production in the United States for the fiscal year ended July 1st, 1916, amounted to an average of 4,000 tons of unbleached sulphite per day and 1,000 tons of bleached sulphite. The figures relating to the United States show an increase of twenty-five per cent in output but at the same time consumption has shown almost a corresponding gain.

The situation is further complicated by the fact that the United States exported 32,000 tons in 1916 as compared with but 8,000 tons in 1915. In other words the United States increased her imports from Canada, decreased those from Sweden, increased her own output and also her exports. Why this whirl-a-gig of exchange and barter, importing and exporting, buying and selling goes on in this manner is for economists to say.

In so far as Canada is concerned there is an unprecedented demand for her pulp both in Great Britain and in the United States. The Swedish embargo and the elimination of Germany and Austria from the world's markets are the two chief reasons for this demand and the higher prices which prevail. Other factors affecting the price are increased transportation charges, higher cost of labor and of all the commodities entering into the manufacture of this product.

The situation is a somewhat complicated one, but out of it all our Canadian pulp men are reaping the harvest which invariably comes to those who plant the seed and tend it while it comes to the time of fruition.

PENNY WISE—POUND FOOLISH.

In one part of the country we find progressive paper makers and lumbermen not only carefully guarding against the destruction of their forests by fire but planting trees for future requirements. In another part of the land we find careless settlers setting fires to clear their land, or hunters and campers leaving fires which they carelessly allow to spread at will.

These fires at times cause the loss of hundreds of lives and millions of dollars worth of property.

The recent fire which swept the Great Clay Belt of Northern Ontario is a case in point. Settlers started fires to clear their land. The fires got out of bounds and 250 lives were lost, hundreds of homes, farm buildings, villages and forest areas were swept bare. The monetary loss will total several millions while the setback given the country and its industrial life is beyond computation.

At the risk of seeming tiresome the Pulp and Paper Magazine again emphasizes the necessity of doing everything possible to safeguard the priceless heritage nature has given us in our forests. Stringent laws against setting out fires and a rigid inspection will do much to lessen our present enormous loss. It has been found that the Permit System is the most satisfactory solution of the settler question. Wherever it has been tried it has given satisfactory results and those who have adopted it would never think of changing to any other system. The conclusion aimed at by those who have tried out the system is worthy of note.

"After a careful study of the question," writes Hon. Jules Allard, Minister of Lands and Forests for Quebec, "we came to the conclusion that the most efficient means of protecting the forests from damage caused by settlers' fires, at the same time fostering the agricultural development of the Province, was the Permit System.

"This year, there must have been over 2,500 permits granted. There has been no damage caused by fire for clearing purposes made in virtue of these permits."

The President of the St. Maurice Forest Protective Association of Quebec, patrolling 12,000 square miles of forested and partly settled country states under date August 31, 1916:

"We have been so successful under the Permit System that we would under no circumstances go back to the old way of handling fires. The settlers have co-operated with us in every way and their satisfaction is universal. So far we have had not a single fire caused by a settler, a most unusual and satisfactory record."

Last year in the State of Washington alone nearly 13,000 burning permits were issued, and under them 180,000 acres were burned over. The Permit is an absolute essential of any serious attempt to reduce fire in a developing forest region."

And this is British Columbia's testimony: "From experience gained in British Columbia, the unqualified statement is made that unless brush burning is controlled by means of permits, no real fire protection is possible in a timbered country."

To plant trees for future requirements is a most praiseworthy proceeding, but to allow millions of acres to burn down each year makes our efforts at conservation look sick. It is a Penny wise—Pound Foolish Policy.

The Effect of Certain Chemicals on the Time of Beating

By EVERETT K. MANSFIELD and
J. NEWELL STEPHENSON.

A few words of explanation of the object are no doubt necessary. In the manufacture of paper the pulp stock undergoes a beating process. This beating process employed by the paper maker is accomplished by the pulp in contact with water under the action of a beating engine roll. The fibres are thus separated into structureless, gelatinous, colloidal masses. The duration of this beating exerts a great influence on the strength of the paper. This beating process is long, the usual time being six hours. It is seen that it is thus costly as so much time and power are necessary to successfully carry out this operation.

The object of this investigation was to ascertain whether there was any chemical compound that would exert an influence on this beating process, in the way of catalysis. The beating effect as stated above is obtained by purely mechanical means, consisting of pressing, crushing and rubbing the fibres in the presence of water. As the time of beating is increased the stock becomes more slimy, greasy and slow. The combination of the water with the cellulose is spoken of as hydration. When mechanical hydration is carried out to its fullest extent it is accompanied by a breaking down of the fibrous structure and the production of cellulose jelly which agglomerates and on drying hardens to a product resembling the composition of bone.

Apparatus.

In studying the problem it was very evident that any apparatus used must be capable of sufficiently accurate control so that the exact conditions of the experiments could be duplicated at any time, and also that it must give the results on comparatively small samples of pulp. Miniature beating engines were eliminated because previous experience has shown that standard conditions cannot be maintained. Pebble mills have been used to carry out similar experiments with very favorable results.* This mill consists of a porcelain jar of a capacity of 3.5 liters holding a charge of 3.240 kilograms of pebbles the size of pigeons' eggs and mounted on a frame which is revolved at a speed of sixty-six revolutions per minute by a Western Electric Induction Motor, 1.8 H. P., speed 1800 R. P. M., 110 volts, 1 phase, 60 cycles.

Procedure.

Preliminary work in this mill was carried on by breaking up weighed samples of bleached sulphite pulp in a known amount of water and beating for different periods of time. It was evident that an hour's beating of 50 grams of pulp on two litres of water gave sufficient strength for an accurate test. It was next necessary to determine how much this stock should be diluted in order to obtain a sheet of sufficient thick-

ness to carry on the strength tests. It was found that a satisfactory sheet could be obtained from a suspension of cellulose of .5% concentration or the 50 grams of pulp in two litres of water diluted to 10 litres.

The problem of making uniform sheets would now appear easy, but such was not the case. Several test sheets must be made from one lot and these sheets should of necessity be of uniform thickness and weight in order to apply strength tests to obtain comparable results.

A 100 mesh sieve with a diameter of 5 inches and a depth of two inches for securing samples of ore and coal was used. This was dipped, filled level full of stock and allowed to drain outside of the sample because dilution would result giving thinner sheets in the lower tests. Felt was then pressed down firmly by a piece of circular board fitting the sieve onto the fibrous mat. This mat having a greater affinity for the wool attached itself and by a gentle tapping was easily detached. Uniform sheets were in this manner obtained. Other schemes were tried, but failed to produce the uniform sheets required.

Testing.

The next problem was to select a method by which the effect produced could be measured.

It was necessary to use appliances whereby figures expressing certain qualities in paper can be obtained and recorded.

An instrument of great accuracy for measuring tensile strength and stretch is manufactured by Schopper of Leipzig. Such an instrument was used in testing the paper made in the manner described above. Strips of paper are cut of a standard width of 15 millimeters. One of these strips is placed between the clamps and the wheel turned until fracture takes place, the figure for tensile strength being indicated in kilograms on the graduated segment by a pointer attached to a weighted lever, the stretch in millimeters and per cent being recorded on the smaller segment.

Another method used in testing the strength of the paper was by the use of the Mullen Tester, which gives bursting strength in pounds per square inch. The paper is firmly held in a horizontal position over a circular orifice by means of a clamp. Immediately below the paper is a rubber diaphragm enclosing a chamber which is filled with glycerin. Rotation of the hand wheel forces a piston into this chamber creating a pressure which expands the rubber diaphragm. The paper which is stretched across the orifice opposes the expansion and the pressure under which the paper is burst is recorded on a dial pressure gauge.

Experimental Part.

A blank was made from 50 grams of pulp beaten for one hour in the pebble mill in two litres of water and diluted to 10 litres (concentration 0.5%). Sheets were made in the manner described above and five sheets were tested in the Schopper and five on the

This paper is the record of a series of experiments done in connection with the pulp and paper work at the University of Maine.

*Paper, Nov. 10, 1915. A Beating Test for Paper Making Fibres, By E. Sutermeister.

Mullen tester All other experiments were carried on under the same conditions with the addition of a chemical and tested in the same manner. From the results obtained conclusions could be drawn as to the relative quality of the paper made.

The first class of chemicals to which attention was directed were salts that hydrolize to the greatest extent. Those are the salts that are produced by the combination of a strong acid and a weak base or vice versa. Sodium carbonate is a good example of alkaline reactions. Caustic soda is our strongest base and carbonic acid one of our weakest acids. Bases and acids were tried with other conditions always the same, 50 grams of pulp beaten in two litres of water diluted to 10 litres. Salts were also tried that hydrolize to a small extent. Following is a list of the chemicals used their percentage to weight of pulp and the strength tests of the sheets.

Twelve series of experiments were made. The chemicals used were: Sodium carbonate, in B, C, K, & L; ammonia in D & E; sodium hydroxide in F; sodium chloride acid in H, zinc chloride in I; acetic acid in J. Each figure in the table is the average of five tests.

Tabular Summary of Averages.

Chemical.		Bursting Strength, lbs.	Stretch per cent.	Tensile Strength, k.g.
Blank	A	51.8	2.08	9.45
10% Na ₂ CO ₃	B	88.4	2.14	10.80
5% Na ₂ CO ₃	C	68.6	2.13	11.00
10% NH ₃	D	84.2	2.73	14.80
5% NH ₃	E	73.6	2.41	13.20
5% NaOH	F	72.2	2.18	12.04
10% NaCl	G	52.0	2.13	9.06
5% H ₂ SO ₄	H	51.4	2.01	8.60
5% ZnCl ₂	I	70.4	2.13	11.04
15% C ₂ H ₅ OOH.	J	50.6	2.36	8.60
3% Na ₂ CO ₃	K	86.0	2.29	14.30
1% Na ₂ CO ₃	L	77.4	2.78	13.60

From the previous data it is seen that the desired effects were produced upon the pulp in every case where sodium hydroxide, sodium carbonate, ammonia and zinc chloride were used. In the case of sodium carbonate and ammonia the effect was very marked. Such favorable results were obtained by the use of sodium carbonate that experiments using 1% and 3% were tried (columns K and L) whereby a stronger paper was produced than with the 5% sodium carbonate. In the two cases where the acids were used (columns H and J) the paper was very brittle, testing lower than the blank. The fibres on examination showed the deteriorating effect produced by the acid.

Commercial ammonia hydroxide (NH₄OH) costs eight cents per pound and figured on the loss of ammonia (NH₃) would cost twenty-nine cents per pound, this is one reason for its elimination of further tests. Another reason for its elimination is because of its disagreeable fumes. In a paper mill the paper is dried by passing over steam heated cylinders and all free ammonia not lost in back water will thus be volatilized.

Commercial soda ash (Na₂CO₃) can be bought in large quantities for three cents per pound. It is therefore a relatively cheap material. Any excess of alkali would be neutralized by alum used later on in the paper and no harmful results would come from this source.

It has been the experience of many working along similar lines that many things can be carried on in an experimental way but cannot be put into practice on a large scale. I next endeavored to place the problem more nearly under mill conditions by using a small beater. A sample of 75 grams of sulphite pulp was beaten in a Noble and Wood miniature beating engine in five litres of water for two hours and diluted to 15 litres (concentration .5%). A second experiment was carried on with the same concentration plus 5% sodium carbonate under the same conditions. Following are the results:

		BLANK (1.)		Tensile Strength k.g.
Bursting strength Lbs. per sq. in.		Per cent m.m. stretch.		
58		1.85		11.7
70		2.00		10.8
65		1.80		12.8
66		1.85		9.1
59		2.20		11.4
Average	63.6	1.94		11.16
		5% Na ₂ CO ₃ . (2.)		Tensile Strength k.g.
Bursting strength Lbs. per sq. in.		Per cent m.m. stretch		
76		2.40		12.8
76		2.20		13.8
79		2.50		13.3
80		2.50		14.3
75		2.40		13.5
Average	77.1	2.40		13.6

It is evident from the above results that a stronger paper was obtained by the addition of sodium carbonate by treatment of the pulp in the beating engine. The amount of time saved by the addition of the sodium carbonate could only be successfully determined in a paper mill where typical conditions are found. An experiment for this purpose was carried out in the beater. A sample of 75 grams of pulp was beaten in five litres of water with an addition of 5% sodium carbonate for one and one-half hours. The strength tests were as follows:

		5% Na ₂ CO ₃ . (3.)		Tensile strength k.g.
Bursting strength Lbs. per sq. in.		Per cent m.m. stretch.		
76		1.9		12.3
78		2.1		13.0
82		2.1		12.4
75		8.5		13.9
79		2.5		13.9
Average	78	2.2		13.1

From the results in the above (strength tests, 3) compared with the results in strength tests (1) it is seen that a slightly stronger paper is obtained by beating one and one-half hours with the addition of sodium carbonate than beating two hours without this addition. The time was cut one fourth by the use of sodium carbonate.

In order to confirm on a larger scale the results obtained in the small beater, two experiments were carried out in the 12.5 lb. beater. A blank was beaten six hours (conc. 3.88) and diluted to a known amount. The beater roll was raised and lowered according to a schedule. A sample of the same number of grams was beaten under the same conditions four hours with an addition of 5% Sodium Carbonate (conc. 3.7). The samples were tested for bursting strength only. Following are the results:

5% Sodium Carbonate	Blank.
111	110
106	102
112	102
105	108
114	107
Av. 109	Av. 105

These figures bear out the results obtained in the smaller beater and in the pebble mill, namely—that

the addition of sodium carbonate to the beater makes as strong a paper in less time, and stronger paper in the same time than can be made from the same pulp without such addition.

Since the power consumed in beating and money invested in beater capacity figures as a large item in the cost of production, it would seem distinctly worth that an experiment similar to ours be conducted by paper manufacturers on a mill scale.

Orono, Maine. June 1916.

Big Era of Progress Represented by Chemical Exposition

The National Exposition of Chemical Industries Which Was Held Last Week at the Grand Central Palace, New York City, Brought Out Many of the Most Improved Methods of Paper Mill Work and Some of The New Dyes and Chemicals Used in Paper Making—Important Meeting of the Technical Association and Other Features of Interest.

(Written by R. W. Jolly, Especially for The Pulp and Paper Magazine).

New York, N.Y., Sept. 28, 1916.

By the time this is read by the subscribers of the Pulp and Paper Magazine, the second National Exposition of Chemical Industries will be in full swing at the Grand Central Palace, in this city. From the preparations made for this affair, there is no doubt but that it will be ranked with the most important events in the year's history of the trade.

Ever since last year, when the first show was held in this city and since the trade was awakened to the importance of the event and to the fact that it was the best means of measuring the progress in the technical part of industry, plans have been in preparation for the coming exposition. It will be recalled that, when the chemical show was held last year, it was a necessity. The chemical industry was in a state of upheaval. Because of the war in Europe, many of the raw materials in common use had become unavailable. The domestic supplies had become exhausted and, for a while, it looked as though there might be a famine in certain raw materials. For that matter, there was a famine. But the ingenuity of the American chemists soon made known the fact that it was possible to overcome the great predicament in which the country found itself.

For months, the daily newspapers and the trade papers were full of stories relating of the many discoveries and inventions which had been made, all of which threatened to solve the problem. After a while, there was a demand from the various trades to learn just what had been done. It seemed to be a universal desire to find out whether any progress had been made and of what material benefit it would be. The first National Exposition of Chemical Industries was the result. From all parts of the country, manufacturers of chemicals flocked to show what they had to offer that might ease the situation. At that time, the paper industry was feeling the first severe effects of the war. Bleaching powder could not be had and deep colors, such as maroon, green, blue and other of the anilines were so scarce that many mills were forced to cease taking orders in which they were to be used, while other mills were paying ridiculous prices so that they could have stock enough to fulfil obligations. So it can readily be understood that the exposition had much of

interest to offer. There were many new processes on exhibition—new ways of making anilines and their various components—new ways of making substitutes for potashes, for purifying water wastes and improved methods of handling many of the mill problems which required a technical knowledge.

One reason that may be given to show the first technical show was of unusual importance is the fact that coincident with it and in the very same building, the Technical Association of the American Paper and Pulp Association held its first convention. The convention was held at a most propitious time, and its results were most prolific. There, in an environment which could not have been better chosen, where everything was for the betterment and improvement of the industry, the expert chemists and technical men of the paper trade gathered and started a movement which has since shown itself to be of such importance that it promises to occupy most of the attention of the paper manufacturer in the future. It was the consensus of opinion that a second chemical show should not only be held, but that it would be an indispensable feature of the activities of the year. The past twelve months have been memorable because of the many problems which have arisen in that time.

On account of these problems, the trade has been looking forward to the coming exposition, so that it is not unreasonable to anticipate that the attendance will be record-breaking. The exhibitors will include all of the leading concerns which manufacture paper-making chemicals and other raw materials, together with a large number of paper machinery concerns, all of whom your correspondent will mention in his next letter.

On Monday, the 25th of September, the American Chemical Society will start holding meetings which will continue throughout the week. On Friday night, September 29, the American Chemical Society expects to hold a subscription banquet at the Waldorf-Astoria. The members of the Technical Association have been invited to attend this banquet, as have been the members of the American Electrochemical Society, which means that the affair will be a big one, and of more than passing importance.

Among the papers which will be delivered during

the week by speakers of national fame are: "Chemistry and National Welfare," by General William Crozier, chief of ordnance, War Department; "Chemistry and Banking," by John E. Gardin, vice-president of the National City Bank; "Expanding Relations of Chemistry in America," by Charles H. Herty, president of the American Chemical Society; and the "Manufacture of Paper, Pulp and By-Products," by Robert B. Wolf.

On Thursday, September 28th, the Technical Association will hold its fall meeting at Schermerhorn Hall, Columbia University, and will continue its meetings on Friday and Saturday. This meeting promises to be of unusual importance, judging from the following discussions scheduled:

"Liquor Making, The Cooking of Wood by the Soda Process, The Recovery Process." Report of the Committee on Soda Pulp. By Martin L. Griffin, Oxford Paper Company, Rumford, Me., chairman.

"Cellulose Fibres and their Reaction to Dyestuffs," By Otto Schutz, chairman of Committee on Dyestuff Adulterations.

"A Study of Some of the Factors Influencing the Retention of Fillers by Paper Pulp." By Professor John D. Rue, Department of Chemical Engineers, University of Michigan, and F. Edwin Ford, holder of the Paper Manufacturers' Fellowship at the University of Michigan, Ann Arbor, Mich.

"Management of the Beater Room." By A. B. Green, of S. D. Warren & Co., Cumberland Mills, Me.

"Some Chemical and Physical Reactions of Rosin Sizing Solutions." By J. A. De Cew, process engineer, Montreal, Canada.

"Some Problems in the Drying of Paper." By Jay Grant De Remer, of Martin & De Remer, New York.

"Pulpwood Cultivation and Conservation." By Professor P. S. Lovejoy, Department of Forestry, University of Michigan, Ann Arbor, Mich.

"Automatic Pressure Regulators for Woodpulp Grinders." By Edward T. Moore, Westinghouse Electric & Manufacturing Company, Syracuse, N.Y.

"United States Government Publications Pertaining to Pulp and Paper." Report of the Committee on Bibliography, Henry F. Surface, chairman.

"Abstracts of Foreign Literature of Pulp and Paper." Report of Committee on Abstracts, Professor J. N. Stephenson, Department of Chemistry, University of Maine, Orono, Me., chairman.

"A New Method of Surface Sizing." By H. M. Wheelwright, Wheelwright Paper Company, Fitchburg, Mass.

"Methods for the Testing of Lime, Caustic Soda, Soda Ash, Sulphuric Acid and Starch Derivatives," Report of Committee on Standard Methods of Testing Material Used in the Manufacture of Paper. By Max Cline, International Paper Company.

The exposition will give the public an opportunity of seeing collected together a remarkable collection of apparatus, machinery and products, which are representative of the great usefulness of the chemical and allied trades. No estimation can be made of the educational value which the demonstration will have. The exposition is not only one which the scientist can appreciate, but on the contrary, it is one from which each visitor may carry away his own impression and added knowledge.

One exhibitor will operate a miniature plant which makes sulphuric acid by the contact process. The American dyestuff industry will be well represented with raw materials, intermediates, finished dyes and

dyed products, shown by most of the important companies. One exhibitor will show the process for making one class of dyes, and will operate a complete refrigerating plant for this purpose. Another group of companies will show every step in the dyestuff industry, coal, coaltar, crudes, intermediates, dyes, and the alkalis acids and salts necessary in the various steps. Electrolytic cells for making caustic soda, chlorine and sodium hypochlorite form another interesting feature. The products of these cells will be shown and also some of the uses of chloring in chlorine derivatives, such as carbon tetrachloride, chlorobenzol, etc. A nitric acid condenser will be in operation. The Cottrell electrical precipitation process of removing solids and liquids from gases will be demonstrated, and it will be shown how it can be applied to the recovery of dust in cement plants.

In his next letter, your correspondent hopes to have a very interesting story of the new things at the conventions, the exposition, and of the many other features of importance which will be evolved.

THE USE OF CREOSOTED WOOD BLOCKS FOR SIDEWALKS.

A short news item in a recent issue of the American Lumberman stated that the newspapers and some of the citizens of Ottawa, Ontario, were agitating the desirability of constructing sidewalks on the principal streets in Ottawa of wood blocks.

The idea is attractive and, when one comes to think about it, that it has not received greater attention is somewhat surprising. It is true that such a sidewalk must depend largely upon the foundations upon which it is laid and in this respect it will not bear the neglect that is sometimes observable in the case of concrete sidewalks where the cinder fill beneath the walk has been washed away, having it unsupported for a foot or so at the edge. However, the same observation is, of course, true in the case of sidewalks of vitrified brick; and wooden sidewalks would be far superior to these in that the wearing surface once properly levelled would tend to remain smooth and agreeable to the feet of the pedestrians. Furthermore, the qualities of noiselessness and of nonconduction of heat are superior advantages. A wood block sidewalk would be much cooler in hot weather than one of either concrete or brick and correspondingly warmer in cold weather.

The creosote treatment of blocks for this purpose would have to be carefully done in order to obviate any possibility of bleeding, as this of course could not be tolerated. This, however, is problem not at all difficult of solution, and it is to be hoped that the citizens of Ottawa will go ahead and set an example that in time may be emulated in other enterprising cities upon both sides of the boundary line.

AN ORDER FOR TURBINES

William Hamilton Company, Limited, Peterboro, Ontario, have just issued a new bulletin, No. 54, describing in detail their two principal types of turbines, viz., Standard Samson and Type Z., and illustrating several latest designs of hydro installments equipped with these turbines.

Among other orders recently secured by the William Hamilton Company, Limited, is one from the Hought Paper Mills, Ltd., for a 30" 240 h.p. turbine for their new mill at Camden East, Ontario.

"Water Powers of Quebec Province."

One of the series of monographs published by the Dominion Water Power Branch on the Water Powers of Canada, in order to stimulate public interest in the economic possibilities of Canada's Water Powers, relates to the Province of Quebec.

This monograph was prepared by Mr. F. T. Kaelin, Assistant Chief Engineer, Shawinigan Water and Power Company, Montreal, an engineer of extensive experience, and one exceedingly well qualified to write on the subject under review.

Mr. Kaelin in his introduction, draws attention to the prominent part the extensive water powers of Quebec Province will undoubtedly play in the industrial development of the country.

The Province of Quebec is extremely rich in water powers. According to Government investigation the available water powers of Canada amount to 17,000,000 horse power, of which 5,600,000 horse power is in Quebec Province. It is the author's opinion that these figures are very conservative and could be materially increased if the flow of some of the rivers were regulated by means of suitable storage reservoirs.

The Province enjoys the advantage of excellent transportation facilities, bounded on the east by the Atlantic Ocean, and traversed throughout its entire length by the St. Lawrence river, it possesses all the advantages of both a marine and inland country.

The total railway mileage is more than 4330, of which 300 miles is electrically operated.

The superficial area of Quebec Province is 351,873 square miles and in 1911 the population of the province was over 2,000,000. The thickly populated districts are those surrounding Montreal, Three Rivers and Quebec.

Among the rich natural resources of the country may be mentioned the immense forests, almost inexhaustible, the richest asbestos mines in the world and the gold, copper and iron mines. The principal manufactures are shoes, textile goods, paper, railway equipment, bricks and cement.

The sources of water power of immediate importance and interest in Quebec Province have been discussed by Mr. Kaelin as those within easy reach of the Ottawa, Montreal, Three Rivers and Quebec Districts.

Ottawa District.

The principal water powers in the Ottawa district are those of the Ottawa river and a number of its tributaries. The Quinze river, really an upper portion of the Ottawa river and flowing near the Cobalt Mining district has an available power of 90,000 horse power, no part of which is developed at present. The Lievre river, a principal tributary of the Ottawa river, has a total available horse power estimated at 85,000 of which less than 10,000 horse power is developed. The Gatineau river, a still larger tributary of the Ottawa river, is capable of generating 225,000 horse power, none of which is utilized to date. Because of its near proximity to Montreal, the Carillon rapids on the Ottawa river is of exceptional importance. This rapids is capable of developing 160,000 horse power.

Montreal District.

On account of the ready power market existing in

the Montreal district, water power development has been carried out extensively. The only large water powers in the district are on the St. Lawrence river. The Cedars and Cascade rapids situated on the St. Lawrence about thirty-five miles from Montreal, and having a fall of 30 feet are capable of generating 500,000 horse power. The present development when completed will have an output of 180,000 horse power. To date there are nine vertical turbine units installed, each developing 10,000 horse power, 60,000 horse power of which is transmitted to Aluminum works at Messina, and the remainder to Montreal. The present plant of the Canadian Light, Heat and Power Company, at St. Timothee furnished about 20,000 horse power to Montreal. When completed the plant will have a capacity of 50,000 K. W. About 13,000 horse power is furnished to the Montreal consumers by a development on the Soulages Canal, near Cedar rapids.

The Lachine rapids, on the St. Lawrence river, have a total available horse power estimated at 400,000. At present only 13,000 horse power has been developed. At Chambly, a hydro-electric plant on the Richelieu river provides Montreal with 20,000 horse power. Montreal at the present day receives an aggregate of 125,000 horse power supplied by falling water. Of the still available power around Montreal, 240,000 horse power can be easily developed as the market demands. The City of Montreal, favoured by its location as a seaport, and as a centre for abundant water power, offers great advantage to the manufacturer whose business involves the consumption of a large amount of power.

Three Rivers District.

In the Three Rivers District the St. Maurice river flows for a distance of 300 miles through richly timbered areas, ending its course at the City of Three Rivers. The pending construction of a new dam on the St. Maurice river at a cost of \$1,500,000, to regulate the flow of water will render this river capable of developing 650,000 horse power. The most southerly water power on the St. Maurice is situated at Le Gres falls, where 60,000 horse power is available, none of which has been developed.

Shawinigan falls, twenty-one miles from Three Rivers, is the scene of the next hydro-electric plant on the river. The entire water rights of Shawinigan falls are owned by the Shawinigan Water and Power Company, which sells a portion of the water to local manufacturing concerns for their own use, and operates its own large power plant with the remainder. This plant is capable of generating 155,000 horse power. Some of this power is used at Shawinigan falls for the reduction of aluminum, the manufacture of carbide, cotton and other goods, but the larger portion is transmitted to Montreal, Three Rivers and various smaller towns, and mines in the district. The flourishing town of Shawinigan Falls, with a population of 5,000, owes its existence to the development of hydro-electric power. This town is served by both the Canadian Pacific and the Canadian Northern Railways, and with its abundance of water power, constitutes an ideal locality for the manufacture of products involving electro-chemical processes.

Grand Mere Falls, on the St. Maurice twelve miles above Shawinigan falls, has a head of 75 feet. At pres-



BELGO-CANADIAN PULP AND PAPER COMPANY'S PLANT AT SHAWINIGAN FALLS.



DAM AT SHAWINIGAN FALLS.



LAURENTIDE COMPANY LIMITED MILLS AT GRAND MERE.



CHAUDIERE FALLS, CHAUDIERE RIVER.

ent 30,000 horse power is consumed in the manufacture of paper. The available power at Grand Mere amounts to 100,000 horse power. At La Tuque, on the St. Maurice, about 103 miles from Three Rivers, there is a 70 foot water fall capable of developing over 75,000 horse power. The existing pulp mills at La Tuque consume only a 3,500 horse power. There are a number of water powers north of La Tuque which still belong to the Crown, and are available for future development. Considering that Three Rivers is a port of call for both Ocean and river boats, and that all the large powers are within easy reach, it is at once apparent what a unique location as regards manufacturing facilities is enjoyed by that city.

Quebec District.

Although a vast amount of water power is available in the region directly north of Quebec City a comparatively small quantity has been developed to date. The larger water powers in this district are practically all to be found upon rivers flowing to or from Lake St. John, and especially upon the Saguenay river which connects Lake St. John with the St. Lawrence. At Grand Discharge, where the lake empties its waters into the Saguenay, there are two main falls, which are capable of generating 375,000 horse power, and the water rights have been secured by the Quebec Development Company, who has in view a storage scheme whereby the above available power would be increased to over 1,000,000 horse power. Construction work on this development is expected to commence in the near future. Some twenty miles below Grand Discharge is a series of rapids having an available power of over 240,000 horse power, none of which is yet developed. At Chicoutimi, a few miles farther down the Saguenay, a hydro-electric plant is developing 7,500 horse power which represents about half the available power.

Among the chief tributaries of the Saguenay are the Shipshaw river with 8,000 available horse power, some of which is being developed, and the Perabonka river with 120,000 horse power available. A number of tributaries of Lake St. John flowing from all directions have their courses broken by numerous falls and rapids, which might be turned to great industrial use. Of those rivers running into Lake St. John, are the Ashwamuchuan river with 250,000 horse power available, the Mistassini and Muskosibi rivers each with 12,000 horse power, the Metabetchouan river with 11,000 available horse power, and the Oniatheouan river, whose falls are capable of generating 13,000 horse power, of which 5,000 horse power is already developed. A vast amount of power is available in the Lake St. John region, most of which could be transmitted electrically to Quebec City, if desired, or used on the spot for electro-chemical processes and other purposes. This district is also richly timbered, and should prove attractive to those interested in the pulp and paper industry.

Miscellaneous Powers.

On the north shore of the St. Lawrence between the Saguenay and the Atlantic Ocean, the country is scattered with large powers, which, like the country itself are entirely undeveloped. On the south shore of the St. Lawrence east of Quebec, the only power rivers are River de Loup, and Magdalen rivers, of which the available power is 3,500 and 50,000 horse power respectively. It is estimated that nearly 1,000,000 horse power is available on the rivers scattered on the James Bay Slope.

The developed water power in the Province of Quebec amounted at the beginning of 1915 to approximately 520,000 horse power, representing less than 10% of that available. The Government of the Province of Quebec, realizing the important part its water powers are destined to play in the development of the country have inaugurated a far reaching policy, promoting the conservation of water power.

Mr. Kaelin sees an optimistic future for the development of water power in the electrification of our big railways, the increasing demand for the products of electro-chemical, and thermo-electric processes and the manufacture of artificial fertilizer from the nitrogen of the air.

A contribution to this monograph, by Arthur Amos, C.E., Chief Engineer Hydraulic Service, Department of Lands and Forests, Quebec, refers to the "Manner of Obtaining Authorization for the Development of Water Powers in the Province of Quebec" and sets forth fully the rules and regulations laid down by the Government of Quebec Province to those who desire to obtain water power rights in that Province.

Owing to the limited space available, it is impossible in a review of this nature to do justice to Mr. Kaelin's monograph. The monograph, representing as it does the wonderful water power possibilities of Quebec Province, will be found by engineers, and those interested in water power development, to contain both interesting and profitable reading.

BIG BUSINESS.

Canadian Pulp Mill Machinery Company, Ltd., Montreal, have recently secured the sole manufacturing and selling rights for Canada of the "Record Improved and Quick Opening" Gate Valves with patented Clean-outs. This line is very well and favorably known in Canada, and it is interesting to know that

This Company reports very healthy sales for the past few weeks. Among other machines, they recently secured orders for

10 P. & H. rotary diaphragm screens for the St. Maurice Paper Company, Limited.

10 P. & M. rotary diaphragm screens for the Bathurst Lumber Company, Ltd., also

4 P. & M. rotary diaphragm screens for the Brompton Pulp & Paper Company, Ltd.,

5 Grinders for the Donnacona Pulp & Paper Company,

3 Sulphur Burners for Ha Ha Baie Sulphite Co., Ltd.

UNION BAG & PAPER.

Stockholders of Union Bag & Paper Co. unanimously voted to accept proposed merger of Union Bag & Paper Co. and Riegl Bag Co.

The new company will be known as Union Bag & Paper Corp. with capital stock of \$10,000,000 of one class. Present holders of Union Bag & Paper Co.'s \$16,000,000 common stock will receive \$2,000,000 new stock and holders of company's \$11,000,000 preferred will receive \$8,000,000 new stock. New corporation will pay cash for outstanding stock of Riegl Co. at \$100 a share.

Report for first six months of year showed total profits of \$541,043. This compares with a deficit shown for entire fiscal year of 1915.

The Use of Bark for Paper Specialties

By OTTO KRESS,

In Charge, Section of Pulp & Paper, Forest Products
Laboratory, Madison, Wisconsin.

If the bark is not carefully removed, preliminary to the pulping of wood by either chemical or mechanical processes, it appears in the pulp and produces small specks in the finished paper, detracting from the appearance and value of the sheet. Some kraft mills do not clean their wood preparatory to pulping, depending on the alkaline digestion to destroy the bark. This practice is only followed to a very limited extent as the high consumption of chemicals in the pulping of bark and unevenness in shade and uniformity of the resulting pulp are decided drawbacks. The loss in barking will depend on the nature and condition of the wood, and on the method of barking the wood, and will vary from 10-25 per cent, based on the weight of the rough wood. According to the census of 1911 of the Department of Commerce, there were consumed in the United States 4,328,052 cords of pulpwood of which 280,534 cords were classified as slabwood and other mill waste. Practically all of this wood was cleaned and barked before pulping. The bark, as removed at the mill is saturated with water and even with heavy pressing can only be made about 50 per cent dry, making it of comparatively little value as fuel. One mill that brought this matter to our attention loaded the daily waste from the drum barking of 100 cords of spruce wood into gondola cars, and disposed of it by filling in low places around the mill. They experienced difficulties from the odors of the decomposing bark, from fires which are apt to occur and which are hard to control, while the cost of removal was estimated at from \$15 to \$20 a day.

Large quantities of waste bark in the tanning industry are likewise awaiting successful utilization. Waste tan bark from the leaches is about 35 per cent dry, and has an estimated fuel value of \$.60 in comparison with \$3 bituminous coal*. The latest census figures from the Department of Commerce and Labor on tan bark production for 1909, showed a production in the United States of 698,365 tons of hemlock bark and 224,070 tons of oak bark, valued at \$9,968,710. The production since then, however, is reported to have steadily diminished, because of the increased use of chemical tanning agents, and accurate data as to the present amount is not available. Such minor uses for the waste bark as the white lead industry, runways for stables, etc. take but a very small amount of the bark, leaving the balance for fuel after the tannin extraction.

Other sources of waste bark in the United States are the lumbering of redwood, cedar, etc., where the bark is a decided detriment both in the lumbering operation and at the sawmill. The Forest Products Laboratory in attempting to utilize these wastes for pulp and paper purposes first attempted to reduce

the bark by chemical pulping. A decided drawback is the small yield and very heavy chemical consumption. As the various waste barks such as spruce, redwood, extracted hemlock bark, etc., all have different properties, it was next attempted to reduce them to a pulp condition by simple mechanical reduction in the beater and jordan and after mixing with various fibred pulps, to run them over our experimental machine into various paper products. The apparatus used in these experiments at the laboratory was a 40-pound beater, a small jordan, and a 15-inch experimental Pusey and Jones fourdrinier machine.

A paper was made at the laboratory on the basis of 80 per cent extracted hemlock bark and 20 per cent kraft pulp which showed such remarkable impregnation towards tars, asphalt, etc. that it appeared advisable to make further tests on a mixture of hemlock bark and rag stock to try and cheapen the felts used for roofing and shingle stock. A co-operative study was undertaken with a company manufacturing roofing felts to work this out on a commercial scale.

Samples made at the laboratory on a basis of 60 per cent rag stock and 40 per cent waste hemlock bark, showed a good strength and good saturation. A factory trial was then arranged for and roofing felt was made on a 114-inch trim cylinder machine. The beaters in this trial were loaded very heavily using 9,800 lbs. of 33 per cent dry bark in the ordinary 1,200-pound beater. The bark was beaten for one-half hour with the roll down to reduce the larger pieces, and then dropped into a separate chest from which it was pumped to a jordan and dropped into the machine stuff chest. Felt ends were used for convenience instead of rags. They were opened up in the beater, dropped into a separate beater chest, brushed lightly in a separate jordan, and then mixed with the ground bark in the machine stuff chest. The percentages of rag and bark were controlled by regulating the amount put through the separate rag and bark jordan, the discharges from which were mixed in the machine stuff chest. The mill in which this trial was made ordinarily makes chip and box board, and to avoid unnecessary dirtying of the machine, only the two end vats of the possible five were used. Various runs estimated up to 80 per cent bark and 20 per cent felts were made, and no difficulty was experienced in passing the paper over the machine or in drying. Using two vats, only thin felts could be made of an average calipre of 40 to 45 points. The backwater, while reddish in color from the soluble coloring matter removed from the bark, was comparatively free from fibre. In this trial 6,000 lbs. of finished felts were made, and the rolls were later impregnated and finished into roofing at two different plants.

Felt made on the basis of 80 per cent bark would of course be too weak to stand up the weakening action of the hot asphalt and would break under the tension of pulling the felt through the saturating tank. Felt carrying this high percentage of bark was made at this trial in order to bring out to the maximum

Paper presented at meeting of the Technical Association of the Paper and Pulp Association, Sept. 29, 1916.

*Jour. Am. Leather Chem. Ass'n., Vol. XI., pp. 361.

extent the difficulties that might be expected in the mill production.

A co-operative study was then undertaken by the laboratory with the saturating plant, a felt mill and a tannery to develop the practical use of tan bark in the manufacture of roofing felts. At the present time the co-operators are using at certain mills having an average daily production of 50 tons of felt, approximately 60 tons of dry bark a week, which is shipped from the tannery, 40 per cent dry. It is reported by the co-operators that roofing felt is being successfully made and offering no undue difficulties in the saturating plant on a furnish in which tan bark is used up to 20 to 30 per cent. The average price of rags for the manufacture of felts at the present time is \$40.00 a ton, and conversion loss is estimated to average 25 per cent. The value of waste bark for fuel as already stated is \$.60 a wet ton, in comparison with bituminous coal at \$3.00 a ton. To this must be added the cost of handling the bark into the cars, the profit to the tannery, the expense of plant facilities necessary in changing the tanner's fuel to coal and in rearranging side tracks and loading facilities, and the freight rate to the felt mill. If this freight rate is high, it would appear to be advisable to consider the cost of drying the spent bark from a 66 per cent moisture content to about a 15 per cent content and so avoid the freight on the water. Modern drying apparatus has made possible the cheap drying of raw materials to a remarkable degree. This drying might offer difficulties in obtaining the necessary minimum car weight, as the spent bark is bulky.

One of the difficulties still to be overcome which, however, we feel can be easily solved is the controlling of the percentages of bark and rag stock run onto the felt machine. At first the bark, after passing through the bark jordan, was mixed with the beaten rags in the beater rag stuff chest; then pumped through the rag jordan to the machine chest. This offered considerable difficulty as any variations in pumping, variations in the level of the stock in the chests, etc. caused a variation in the percentage of bark in the finished felt. In order to hold the percentage of the bark constant the jordaned bark may be pumped to a separate chest with overflows arranged at 10, 20, 30 per cent, etc. The bark can then be run by gravity to the various rag beaters or the right amount can be run directly into the rag stuff chest in proportion to the amount of rags dropped. When this development work has been done, the felt is now made on a 72-inch felt machine with a 36-inch cylinder and 46 three foot dryers. It has been found by experience that no beater treatment for the bark is required. The bark at the present time is screened through a screen with about a 3/4" mesh, and is thrown into the chest. From here it is pumped to the regulating box on the jordan and the discharge from the jordan run to the beater rag chest. The mixture of rags and bark after passing the rag jordan, goes to the machine chest and then onto the machine. The object of the screening of the raw bark is to prevent the choking of the inlet pipe to the jordan by the larger pieces of bark. The larger pieces which are screened out are thrown into the beater with the rags and reduced to a proper condition in this way. A valve placed on the discharge pipe from the jordan was found to be a convenient way to regulate the fineness of the stock, as it enables the operator to regulate the time of jordaning. This

direct jordaning of the bark makes a decided power saving in the beating, for if a considerable replacement of rags is made by the bark, less beaters are required for the same felt output.

No difficulty is experienced in either forming, or running the sheet. A little difficulty has been experienced in the proper drying of the felt, when a large percentage of bark is used. In order not to curtail the production by slowing down the machine it would appear advisable, if the mill is so arranged as to permit it, to add some extra dryers or arrange for some special drying device. Due to the higher specific gravity of the bark, the finished felts are a trifle heavier, and allowance must be made for this in running the stock. The felt mills to-day are receiving a poor grade of rags, in fact only such rags as can hardly be used for any other purpose. With a more careful selection of the rags, we believe that it will be possible to raise the percentage of bark in the finished felt and still maintain the quality of the finished goods. Further it is possible that the jordan is not the best machine to reduce the tan bark to a proper condition, probably a special refining engine will reduce the bark without unduly cutting the fibre found in the bark. The limitation to the use of a higher percentage of bark does not appear to be in the paper mill, but in the lack of strength in the saturating tanks. This is partly due to the moral inertia and prejudice of the men handling the felt through the saturating tanks. A great deal could no doubt be done by using a better grade of rags that could be readily paid for by only a slight increase in the percentage of bark in the finished felt, as there is such a great difference in the cost of rags and bark.

Two other rather interesting and possible uses for waste hemlock and oak bark have been worked on at the laboratory. Two papers were made at the laboratory on the basis of 80% extracted hemlock and 80% extracted oak bark, the balance in each case being unbleached sulphite pulp. These papers were unsized and had a tendency to dust off fine particles of bark on rubbing, which we believe could be overcome by sizing. Two of the rolls were printed on a commercial 12 color wall paper printing machine, the paper taking the colors well. One of the disadvantages of a grade of paper of this type is that the high specific gravity of the bark makes the paper heavy. Hanging is ordinarily made on a furnish of 80 to 85 per cent ground wood, the balance of sulphite, and a decided saving would be made, if a wall paper made on a basis of 80 per cent bark could find application. The paper made with hemlock bark had a decided reddish color, while the oak bark paper was more of a chocolate shade. We have tried out in a preliminary way the color effect of cheap mordants such as iron sulphate, etc. and find that there is a possibility of changing the shade with very little expense. The present price of this grade of paper was estimated by the wall paper printing concern at \$60 to \$80 a ton. The papers printed better than the ordinary oatmeal wall paper with which it is compared, and if no undue difficulties are experienced in running it on large and fast commercial machines, it should be decidedly cheaper than the present hanging. This paper would undoubtedly have the disadvantage of increased weight and possibly the disadvantage of dusting off small particles of the bark.

Two rolls of unsized paper were made at the laboratory on the basis of 80 per cent extracted hemlock bark and 80 per cent extracted bark, the balance sulphite, and tried out on a commercial machine for making fibre conduits. The paper was run at the mill in competition with their ordinary grade of paper, and impregnated thoroughly and made satisfactory conduit which could be machined and which showed up well under the various tests applied. The paper in which bark was used, was thinner than their regular grade, and further, was softer, and impregnated more readily, which might require a slight change in the blending of the saturant. A decided drawback in the fact that the increased weight of the bark makes the conduit decidedly heavier, so increasing the freight rate on the finished conduit.

Trials were made at the laboratory on the possible utilization of spruce and balsam bark obtained in the drum barking of pulpwood. These barks differ from waste tan bark in being pitchy, which would exclude their use in any product which subsequently had to be impregnated. Further, any large percentage of spruce bark makes a brittle sheet. For certain purposes such as wall board, where the finished board is usually made by plying together the individual sheets by a binder such as sodium silicate, this tendency towards brittleness is of little consequence.

A co-operative study was undertaken with a wall board mill but the work to date has not progressed beyond the laboratory stage. Boards were made experimentally on the basis of 80 per cent waste bark, the balance sulphite and kraft, also boards on the basis of 50 per cent bark and 50 per cent groundwood, which were favorably commented on by the mill.

Spruce bark offers some difficulty in mechanical reduction and we believe that the beater will require extra

sharp tackle, and a special filling in the jordan would be a decided help. At the laboratory no difficulty was experienced in reducing spruce bark in 45 minutes in an experimental beater, while on a commercial beater, fitted with dull tackle a 5 hour treatment still left the bark in an unsatisfactory condition.

Patent specifications on the use of waste bark for pulp and paper purposes have been submitted to Washington by Mr. Howard F. Weiss of this laboratory and myself. If patents for the United States are granted, they will be dedicated to the public. Foreign patents have also been applied for.

There are a great many other possible uses of the various barks which at the present time have either none or a limited value. A fair insulating board has been prepared at the laboratory from the bark of the redwood tree. Other possible uses that suggest themselves are the use of spruce or balsam bark from the drum barking of pulpwood which is to be mixed with sulphite screenings and run into car liners. Further, waste hemlock and oak bark might be used in the manufacture of sheating, carpet liners, bottle wrappers, deadening felts, chip board and box board. A small percentage might be used in stand up boxes where no great bending qualities or high test are required. For indurated fibre ware, such as pails, etc., it might be possible to substitute a large percentage of ground tan bark for the more expensive stock used at present.

The above remarks can only be looked upon as indications of what might be done, and each mill will have to determine, whether they can substitute in part a more inexpensive stock, and still maintain the quality and standard of their product. Waste bark can only be looked on as a filler, and must be used with a longer fibred stock to carry it over the machine. Its use would permit a decided saving in many grades of paper products.

PRODUCTION AND SHIPMENT REPORT FOR AUGUST

Issued by the News-Print Manufacturers Association.

PRODUCTION

SHIPMENTS

Month of	Companies	Actual in Tons		Per cent of maximum	Total tons during month	Per cent of maximum	Total stocks on hand
		Per month Reporting	Per day				at all points
UNITED STATES							
1915							
Year average.	33	1001662	323 1	81.2	1031832	83.7	54592
1916							
August	33	83966	3229	81.5	80075	77.8	67014
1916							
January	32	88522	3405	87.5	88461	87.4	54255
February	32	82566	3303	84.4	81712	83.5	55616
2 Months		171088	3355	86.2	170173	85.7	
March	32	91110	3375	86.7	96305	91.6	51523
3 Months		262198	3362	86.3	266478	87.8	
April	32	87860	3514	90.3	96088	98.7	44232
4 Months		350058	3398	87.3	362566	90.4	
May	32	96224	3564	91.5	95930	91.3	46188
5 Months		446282	3433	88.2	458496	90.6	
June	31	94361	3629	94.3	97582	97.5	44310
6 Months		540643	3466	89.2	556078	91.7	
July	31	86321	3453	89.7	89997	93.5	40961
7 Months		626964	3464	89.3	646075	92.0	
August	31	92978	3444	89.5	93672	90.2	40461
8 Months		719942	3461	89.3	739747	91.8	

CANADIAN MILLS

1915						
Year Average	11	428858	1383	85.2	428821	25898
1915						
August	11	37642	1448	83.3	34815	32778
1916						
January	12	41817	1673	95.1	37944	29831
February	12	41833	1673	95.1	41244	30485
2 Months		83650	1673	95.1	79188	90.0
March	12	45396	1681	95.6	46902	98.8
3 Months		129046	1676	95.3	126090	93.1
April	12	41572	1663	94.5	46785	106.4
4 Months		170618	1672	95.1	172875	96.4
May	12	47048	1743	96.7	48006	98.7
5 Months		217666	1687	95.4	220881	96.9
June	12	45790	1761	97.7	47847	102.1
6 Months		263456	1700	95.8	268728	97.8
July	12	43856	1754	96.8	42487	93.8
7 Months		307312	1707	96.0	311215	97.2
August	12	43559	1613	89.0	44470	90.9
8 Months		350871	1695	95.1	355685	96.4

UNITED STATES & CANADIAN MILLS

1915						
Year Average	44	1430520	4615	82.4	1460653	80490
1915						
August	44	121608	4677	82.1	114890	99792
1916						
January	44	130339	5078	89.8	126405	87.1
February	44	124399	4976	88.0	122956	87.0
2 Months		254738	5028	88.9	249361	87.0
March	44	136506	5056	89.4	143207	93.8
3 Months		391244	5038	89.1	392568	89.4
April	44	129432	5177	91.6	142873	101.1
4 Months		520676	5070	89.7	535441	92.2
May	44	143272	5307	93.2	143936	93.6
5 Months		663948	5120	90.4	679377	92.5
June	43	140151	5390	95.4	145429	99.0
6 Months		804099	5166	91.3	824806	93.6
July	43	130177	5207	92.0	132484	93.6
7 Months		934276	5171	91.4	957290	93.6
August	43	136537	5057	89.3	138142	90.4
8 Months		1070813	5156	91.1	1095432	93.2

REPULPING PAPER.

An American inventor has discovered a means of utilizing a waste digester liquor for removing ink and color from waste news and without discoloring the fibre, so that the paper may be repulped. "I have discovered," he says, "that by subjecting waste print paper, either in a pulped state or in the whole, to the action of spent digester liquors, under any temperature, for the space of one hour or more, then washing the pulp with fresh water, all ink or coloring matter that may be in the paper will be entirely removed, and without discoloring the fibres of the mechanical wood pulp, leaving the same fit to be re-made into white paper. If the waste paper be first pulped, it may be charged into a beater vat filled with either of these spent digester liquors, and by the action of the beating engine all ink or coloring matter will be entirely freed from the pulp. The solvent may then be drained off and the pulp washed in fresh water, leaving the same in a state to be re-made into white paper."

ONTARIO'S OUTLAY FOR FORESTS.

The annual expenditure on forest fire protection in Ontario approximates \$300,000. The province derives an annual revenue of more than \$1,500,000 from its timber lands. For the perpetuation of this revenue and the safe-guarding of life and property, more adequate measures are required than have been in effect in the past.

The report of the Ontario Department of Lands, Forests and Mines for 1915 shows that 126 men were employed on fire patrol along the National Transcontinental and Timiskaming and Northern Ontario railways, at a cost of \$56,326.

"THE CURSE OF THE FOREST."

"The Curse of the Forest," a motion picture of a real forest fire, showing methods of fighting and the devastation which follows in the wake of a forest fire, has just been completed by the Vitagraph Company of America in co-operation with the Pennsylvania Department of Forestry.

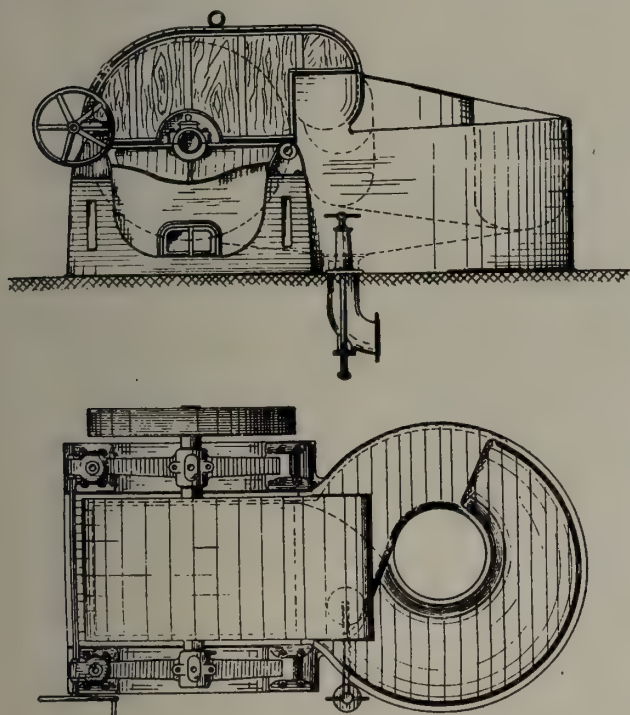
A New Type of Beating Engine

Translated from "Papir Journalen" Christiania, Norway, by Newsprint Mfr. Association.

To the many new types of beaters, which during the later years endeavors for a more effective pulp treatment have brought about, a new type has been added, the so-called "Rabus" beater (named after the German engineer Rabus), which in our opinion deserves attention. We therefore, present below an illustration of the same with a short report.

The machine differs from those hitherto generally in use therein, that a large roll of great diameter is placed at the end of spiral shaped trough and the pulp is carried over the roll to the beginning of the spiral.

In addition the trough has a channel running in screw form around the circle shaped centre wall. In this way the pulp is not hindered by the sharp and



untoward curve which it encounters in machines with a straight partition.

A further point of advantage consists therein that this machine "turns" the pulp, that is, the pulp coming from the outside wall is carried against the centre and vice versa every time it has passed the roll by which an extraordinary mixing of the pulp and a specially uniform dissolving is effected.

The bed-plate is placed at the lowest part of the trough so that the pulp flows there by itself, from which it will be seen that the machine works already from the beginning of the filling up, whereas in the case of machines of ordinary construction the pulp must rise up to the higher placed bed-plate in order to be caught by the roll.

The emptying of the machine will therefore take place much more easily and quicker.

On account of the qualifications here mentioned this machine can be used well filled and with 14% substance contents will make 29.5 feet speed, with 8.9%

substance content a speed of 42.7 to 65.6 feet per minute. The result will then be very quick beating and well distributed fibres.

The machine is suitable for preparing all kinds of paper and otherwise is constructed like the other modern types with the roll in roller bearings on parallel movable levers and easily accessible bed-plate. The bed-plate box and the bearing supporters rest on a joint base of re-inforced concrete, fastened to the sides of the trough, so that vibration is avoided. The whole machine looks attractive and has aroused much interest in the inventor's country, in spite that the conditions which the war has brought on in the paper industry naturally will hamper new acquisitions of machines by the mills.

KEEPING A TIGHT REIN ON FOREST FIRES.

How does the Permit Plan of controlling settlers' fires work in other provinces and states? This question has assumed public interest since the disastrous consequences of uncontrolled settlers' fires in Northern Ontario in July and August.

The following replies have been received by the Canadian Forestry Association, Ottawa:—

"After a careful study of the question," writes Hon. Jules Allard, Minister of Lands and Forests for Quebec, "we came to the conclusion that the most efficient means of protecting the forests from damage caused by settlers' fires, at the same time fostering the agricultural development of the Province, was the Permit System.

"This year, there must have been over 2,500 permits granted. There has been no damage caused by fire for clearing purposes made in virtue of these permits."

The President of the St. Maurice Forest Protective Association of Quebec, patrolling 12,000 square miles of forested and partly settled country states under date, Aug. 31, 1916:

"We have been so successful under the Permit System that we would under no circumstances go back to the old way of handling fires. The settlers have cooperated with us in every way and their satisfaction is universal. So far we have had not a single fire caused by a settler, a most unusual and satisfactory record."

What says the Chief Forester of the highly organized Western Forestry and Conservation Association, Portland, Ore. "In our Pacific Northwestern States, the burning permit is as accepted a part of fire prevention as patrol or fire fighting. None considers abandoning it. Last year in the State of Washington alone, nearly 13,000 burning permits were issued and under them 118,000 acres were burned over. The Permit is an absolute essential of any serious attempt to reduce fire in a developing forest region.

And this is British Columbia's testimony: "From experience gained in British Columbia the unqualified statement is made that unless brush burning, is controlled by means of permits, no real fire protection is possible in a timbered country."

PAPER MILL EMPLOYEES STRIKE.

Seven hundred employees of the Warren Paper Mills at Westbrook Maine, struck a few days ago to enforce recognition of the union.

UNITED STATES NOTES

New York, Sept. 28.

On being assured the eight-hour day would shortly be put in operation the employees of the mills of the Champion-International Paper Company, of Lawrence, Mass., returned to work last week. G. F. Russell, general manager told the employees that the company intended to put the mills on the eight-hour day as soon as possible. The men in the pulp mill were given the eight-hour day at once and the paper mill and coating mill will be given eight-hour shifts as soon as sufficient stock is secured to keep these mills in continuous operation.

* * *

The Missisquoi Pulp and Paper Co. has been re-organized and new officers elected as follows: President, George C. Gill, of the Holyoke National Bank; treasurer and general manager, Archibald P. Ramage; vice-president and secretary, Herbert E. Raymond. The company was founded by the J. T. Shepley and his son, D. M. Shepley, two years ago. The present company manufactures 25 tons per day of white blanks, white and tinted bristol specialties in card boards and has one of the best equipped and efficient mills in the country.

* * *

The Chicago Paper Company held its annual reunion on September 22 and 23. These affairs have come to be recognized among the friends, patrons and staff of the company as one of the best get together meetings in the paper trade.

* * *

Edward W. Broder, trustee in bankruptcy of the estate of the Anchor Paper Company of Windsor Locks, Conn., has been authorized by the referee in bankruptcy to accept \$46,000 from the various insurance companies which carried policies on the mill of the company which was burned last winter.

* * *

At a meeting of the Board of Directors of the Union Bag and Paper Company, held at the offices of the company, in the Woolworth Building, New York, on Thursday, September 14, Malhon B. Wallace was unanimously elected president of the company. Mr. Wallace is a man of wide interests and has been connected with the paper industry for many years. He has been a member of the Board of Directors of the Union Bag and Paper Company since the organization of the company in 1899, and is regarded by his colleagues as a man of sound judgment and ability. He is the president of the Samuel Cupples Woodenware Company, of St. Louis, Mo., and also of the Samuel Cupples Envelope Company of the same place. He is likewise president of the Escavaba Manufacturing Company and a director of the State National Bank and the Commonwealth Trust Company, both of St. Louis.

* * *

William T. Plum, of Newark, N.J., has bought the Seeley Paper Mills Company, of Scotch Plains, N. J. The mill has been idle since the cloudburst which occurred in that vicinity about two months ago. Workmen are busily engaged in pumping out the water and in repairing the damage which was done to the mill at that time. A concrete wall and foundation will be

built which will render the recurrence of this disaster impossible. It is reported that Mr. Plum's son, William T. Plum, jr., will be in charge of the mill after the repairs are completed. The name of the new concern is Plum Inc., "Turin Falls Mills" pattern, friction, and binder's board will be manufactured as usual.

* * *

Work has been started during the past fortnight on the reconstruction of the powder dam of the Crivitz Pulp and Paper Company, of Crivitz, Wis. The old wooden struction has shown signs of weakening, and it has been decided to replace it with a concrete and steel structure. It is expected the work can be completed in three months, or before the final freeze-up for the year occurs.

* * *

The Island Paper Company at Carthage, N.Y., has been granted exemption from taxes for a period of five years upon a new sulphite plant to cost \$100,000. The cleaning away of obstructions and the excavation of the foundations has already been started. Construction will be hastened in the hope that the plant can be ready for operation the first of the year. The building will be two stories and a half high, 88 by 79 feet in dimensions, and of concrete and steel material. It will have a capacity of forty tons of sulphite daily from two digesters. The tower system for the acid plant will be used. The towers will be 65 feet in height and the digesters 32 feet high with a diameter of 15 feet. An addition, 25 x 90 x 40 feet will be built at the end of the mill to be used as a wet room.

* * *

Workmen have started driving the big wells at the plant of the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich. Plans are rapidly being perfected for the new mill that this company is to build, and there is no doubt but before another twelve months rolls around the Parchment Company will be producing all of the paper used in its big plant.

* * *

Up to a few days ago, when the September rains seem to have set in an earnest, the stage of the water in the Wisconsin River was very low. In fact, mills were getting scarcely enough to be of real operating value. Since then, however, there has been a marked improvement, and from now on there probably will be no more difficulty from low water conditions.

* * *

The general lumber investigation, which has been under way for more than a year by the Forest Service has about been completed. The general summary of the report is now in the hands of the Secretary of Agriculture for his official signature. It is understood that because of the great congestion at the Government Printing Office that the report will not be published before the first of November. Parts of the report have not yet been completed, but the summary now before the Secretary, contains the "meat" of the whole investigations of the lumber industry, ever undertaken by the Federal government.

PULP AND PAPER NEWS

E. P. Heaton, fire marshal for Ontario, has returned to Toronto from Northern Ontario, where he was conducting an investigation into the recent forest fires. He will present a report to the Government regarding the best means to be taken to prevent a repetition of the disaster.

Duncan A. McRae, Crown Timber Inspector, passed away in Toronto recently, aged forty-six years. When the great forest fires broke out in Northern Ontario in July last, he was performing his duties of inspector and joined the relief parties. He contracted typhoid fever which followed by pneumonia caused his death in the Toronto General Hospital.

Harry Clegg, representing Lewis Clegg and Son, Manchester, Eng., was in Montreal and Toronto last week, calling upon the trade in an endeavor to buy large quantities of pulp for export to England.

The Beaver Wood Fibre Company, Limited, have taken out supplementary letters patent to increase their capital stock from the sum of one million dollars to two million dollars, by the creation of ten thousand shares of new stock of one hundred dollars each, of which five thousand shares will be preference shares.

A. B. Stovel and "Check" Stovel, of the Stovel Co., printers and publishers, Winnipeg, were in Toronto this week calling upon the trade on their return from a visit to New York and other eastern centres.

C. L. Kenzie, who has had a wide experience in several mills in the United States is now superintendent of the Lincoln Paper Mills Co., Limited, Merritton, succeeding Robt. Daw, who retired some time ago after sixteen years service.

The output of pulp and paper for British Columbia last year was 50,307 tons of manufactured paper, and 13,000 tons of sulphite pulp. The value placed on the output was over three million dollars. The record shows an increase over 1914, and, with the excellent demand, the only handicap was lack of shipping.

A. M. Barkwell, of Barkwell, Phillips Co., wholesale paper dealers, Winnipeg, was in Toronto and other cities last week calling upon the trade and reports business conditions in the West as greatly improving.

The Hout Paper Mills, Limited, with headquarters at Camden East, Ont., and a capital stock of one thousand dollars, have been incorporated, to manufacture, export and deal in all kinds of paper and paper products, and also timber, wood, wood pulp, sulphite rags, etc. The incorporators of the company are L. F. Hout and W. E. Hout, of Buffalo; D. J. Albertson, of Kalamazoo, Mich.; E. A. Crippen, of Toronto, and G. B. McLellan Thomson, of Newburgh, Ont.

The Bishop Lumber Co., Limited, with a share capital of three hundred thousand dollars and headquarters in Nestorville, District of Algoma, have been incorporated to carry on the business of logging and lumbering, to operate saw and planing mills, and manufacture lumber and woodenware. The incorporators are H. H. Bishop, H. W. Bishop and J. A. Bishop, all of Chicago, and J. L. O'Flynn, of Sault Ste. Marie, Ont.

S. F. Duncan, secretary-treasurer of the Provincial Paper Mills Co., Toronto, has returned from a business trip to Kalamazoo, Mich., and other cities in connection with the plans for the new book and writing mill which the company will erect at Mille Roches, Ont., at an early date.

Tenders are being called by the liquidator for the Peterborough Review, which is one of the oldest newspapers in Ontario. The Peterboro' Examiner, which was owned by the late Hon. J. R. Stratton, has been purchased by R. M. Glover, who has been connected with the paper for twenty-four years.

N. G. Czowski, formerly managing director of the Trent River Paper Co., Limited, Frankford, Ont., who is now secretary-treasurer of the Canada Box Board Co., Limited, has taken up his headquarters in Montreal.

By the collapse of six trusses on the roof of the new machine room at the Ontario Paper Co., Limited, Thorold, Ont., last week, Samuel Bartlett, an iron worker, was instantly killed. His home was in Sydney, N.S., and he leaves a wife and family. Several other workmen had a close call. Six of the steel trusses had been raised in position and the seventh was just being placed when it gave way carrying the other six down to the girders twenty-three feet below.

Several members of the pulp and paper industry in Ontario will attend the annual meeting of the National Safety Association, which will be held in Detroit, Mich., from October 17 to 20.

A. G. Pounsford, Safety Engineer of the Ontario Pulp and Paper Makers Safety Association, has just sent out notices to the members to the effect that overhead material must be safely secured to prevent the same falling on passers below and, when overhead work is being done, warning signs should be placed below and workmen should look before they throw anything. Another notice calls attention to the fact that every injury must be promptly reported no matter how trivial. Very slight injuries sometimes require immediate attention to prevent the possibility of infection and blood poisoning, and except in emergencies no employee should undertake to care for his own injuries nor for those of others unless he has had proper instructions in First Aid work. Eyes are often permanently harmed or even destroyed by neglect or by well meant but unskilled treatment.

E. P. Shove, of Colorado Springs, Col., Vice-President of the Mattagami Pulp and Paper Co., Limited, spent a few days in Toronto last week. Good progress is being made on construction at the company's sulphite mill at Smooth Rock Falls. S. R. Armstrong, managing director of the company, reports that the work of erecting the structural steel has now commenced and the mill should be housed in before the end of the year.

In a fire which broke out recently in the plant of E. H. Harcourt and Co., publishers and lithographers, 255 Wellington street west, Toronto, considerable dam-

age was done by water, which poured down through the floors destroying a number of valuable prints. The loss on the contents was \$4,500 and on the building \$1,500. It is thought the blaze broke out through spontaneous combustion.

The Empire Pulp and Paper Co., Limited, which recently took over the plant and property of the Swanson Bay Forests, Wood Pulp and Lumber Mills, at Swanson Bay, B. C., have about one hundred men at work overhauling the mill which has been idle for some years. The mill will have a daily capacity of about thirty tons of sulphite pulp and the company will also carry on the manufacture of high grade spruce lumber.

The Colonial Pulp and Paper Mills, Limited, of Vancouver, B.C., who now have control of the properties at Quatsino Sound, have had plans prepared to build a sulphite mill with a capacity of one hundred and twenty tons daily. The first unit provides for an output of sixty tons and the equipment has been ordered. A large number of men are at work clearing the land for the building sites and the erection of wharves. The company will also construct a number of dwellings and lay out a model town.

A charter has been granted to Leonard-Parmiter, Limited, with headquarters in Toronto, and a capital stock of fifty thousand dollars, of which ten thousand is cumulative, seven per cent preference shares. The company is empowered to do a general printing and publishing business, engraving, book-binding, etc., and to manufacture and deal in books and stationery.

The Waupaca Company, Limited, with a capital stock of one hundred thousand dollars and headquarters in Port Arthur, have been chartered to own and operate timber limits, and to sell and deal in timber and lumber, operate saw mills and to manufacture and sell pulp wood and all by-products of lumber and timber.



SERGT. S. M. MCGUIGAN,

244th Kitchener's Own, formerly with Wayagamack Pulp and Paper Company.

PULPWOOD SHORTAGE IN NORTHERN ONTARIO.

Toronto, Sept. 28.

There is a considerable shortage of pulpwood at the northern Ontario paper mills, as fewer men have been at work cutting, and settlers have not been as actively engaged in clearing operations as in most seasons. Recent bush fires have also destroyed large quantities, the Abitibi Pulp & Paper Co. losing 30,000 cords. Buyers from the Canadian mills, as well as some from the United States, have been visiting the territory accessible from the Timiskaming & Northern Ontario and National Transcontinental railways and securing all the pulpwood obtainable at high prices. At Jacksonboro, near Cochrane, peeled spruce wood two feet in length is bringing \$10 a cord f. o. b. cars for shipment to Wisconsin. This will bring the cost of destination up to \$17 to \$18 a cord, as compared with the former figure of \$12 to \$14. The great scarcity of labor is being felt as acutely by the paper mills as by the lumber operators. About the only available source of labor for the winter's operations in the bush is the Province of Quebec, where enlistments have not been numerous. The Abitibi and Mattagami pulp companies are now bringing in many French-Canadian laborers. Paper-makers estimate that pulpwood for the mills will cost them from \$2 to \$4 a cord more than last season, and are uncertain of obtaining an adequate supply.

SAVED BY A WATERMARK.

In a celebrated courtmartial case which came up for trial in 1871 a young lieutenant was accused of having forged another man's name to a promissory note and obtained money on it, relates Case and Comment. The accusing witness produced the note in question, which was written upon a sheet of blue-ruled foolscap paper, and bore a date of the year 1867.

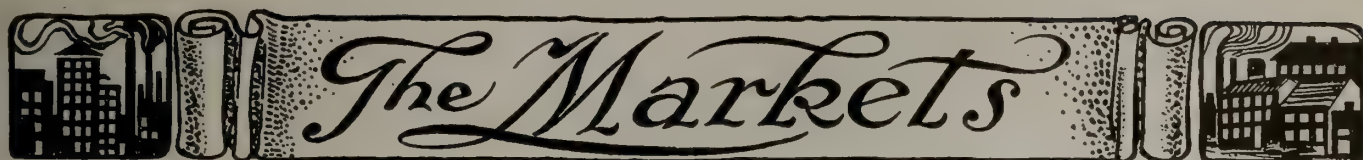
Everything had gone against the defendant, and the case was about to go to the jury, when the sweetheart of the lieutenant, who had clung stanchly to him and was sitting beside him at the trial, happened to pick up the note and hold it in such a way that a strong light from the window shone through the paper. There to her joy she read the watermark, "Swampscott Mills, 1869." In other words, the note purported to have been written on the paper two years before the paper had been manufactured. To add to this romance, the accuser, when himself tried for the fraud, admitted that he was trying to ruin the lieutenant on account of his own love for the young woman.

CANADIAN TOY INDUSTRY.

At the Quebec Exhibition the C. P. R. exhibited a quantity of construction material made from Canadian lumber. The same company also exhibited a number of toys, showing the possibility of this industry in Canada. A number of returned soldiers were engaged in making duplicates of the toys on view.

FIREPROOF PAPER.

An English patent has been taken out by T. J. I. Craig and others, of Manchester, on a method of fireproofing paper. According to an abstract in Journal of the Society of Chemical Industry, in the process of rendering materials noninflammable by means of sodium aluminum carbonate, these materials in which the proofing agent cannot conveniently be precipitated in situ, may be treated by mixing or coating with a preparation of the double carbonate.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The news-print situation shows strength to a greater extent than ever and prices have increased. Now that paper to the value of five cents and under can enter the United States duty free, this is likely to have an upward trend on prices in the Dominion. No contracts are being renewed at present, and one of the largest companies are carrying publishers, whose agreements have expired, along at the old rate until the end of the year until it is seen how matters shape up for the next twelve months.

One authority predicts that new contracts will carry three cents at the mill, but others do not think that the figure for Canadian papers will go quite that high. Some fancy figures are being obtained for spot lots. A new price list for sheet news went into effect a few days ago whereby, in car load lots, the figure is three cents, less freight; two ton lots and upward, three and half cents; and less than two ton lots, three and three-quarter cents. More local press associations have been meeting and, by the end of the year, there will probably not be a worth-while weekly newspaper in the Dominion that does not call for a dollar and half subscription. The export of news-print according to the returns furnished at Ottawa shows a steady increase, but all domestic demands are being met promptly and no complaint is heard from consumers, which is much to the credit of the Canadian mills.

In the book and writing line many orders are being declined owing to the inability of the producers to meet the heavy demand for all kinds of bond and ledger stock for which there does not seem to be any let-up. There was another advance a few days ago of a cent on all book and writing papers, and the higher grades jumped a cent and quarter. The trade has never experienced such activity and consumers will welcome the increased production which will come upon the market at the end of 1916. It is understood that representations have been made to the federal government by the manufacturers to curtail their demands so as to release some of the supply which they have been calling for. Discontinuing certain publications which it is claimed could be very well dispensed with would in a measure relieve the situation.

All coated papers took another jump of one cent during the past week and now for the cheapest grade the price is ten and a half cents; eleven and a quarter cents for No. 2, and twelve and a quarter cents for No. 1 stock, while tints are selling at twelve cents. These figures are nearly double to what they were a year ago when mills were scurrying around for orders and had only a portion of their machines in operation. The greatest difficulty experienced at the present time is in getting raw stock and the finished product has been advanced accordingly.

There have been no change in the quotation for wrappings or kraft, but it would not surprise any one if another advance went into effect shortly. Tissues and toilet papers are very firm, and requisitions still pour

in spite of the advanced prices. A pure sulphite paper, which was selling a year ago at five and a half cents is now fifteen cents and the mills are not particular about accepting orders even at this figure owing to not being in a position to take care of present bookings. In a number of cities and towns where measures have been proposed to compel bakers to wrap bread, the agitation has been dropped as the bread manufacturers have frankly told the authorities that it would mean an extra cent a loaf. Not so much bread is being wrapped by bakers now as a few months ago due to the high cost of paper and several wrapping machines in the shops are standing idle. One leading industrial firm is economizing on letter paper by using only half sheets, and suggests that other business concerns follow the example set.

In the sulphite pulp line prices are going up and the end has not yet been reached. Some mills are talking of advances that will make even the present exalted figures look cheap. Ground wood is getting very scarce and has touched the highest figure ever known in the trade as high as twenty-six and twenty-seven dollars is being realized at the mill. Water conditions in many centres across the border are none too good and many grinders have ceased operating. Inquiries reach Canadian mills asking what they can do to make up the shortage. Before the snow flies it is predicted that ground wood pulp will sell as high as thirty dollars a ton at the mill. This is, of course, occasioned by the enhanced value of wood and the scarcity of labor.

Another indication of the change that has undergone conditions in the pulp and paper trade is the action of the Ontario government who are now advertising for tenders for the right to cut pulp wood and pine on about fourteen thousand square miles of timber limits on the Pic River in the district of Thunder Bay. A year ago when tenders were called for the privilege of cutting pulp wood in the Lac Seul district north of the Transcontinental district, and south of the English river — about 2,500 square miles in all — very few bids were received. The outlook was too uncertain and monetary conditions too stringent. No tender was accepted and the proposition was dropped by the government. Now it is expected that there will be any number of tenders as investors are only too anxious to erect mills in Canada.

In connection with the present offering a new feature has been introduced by the government in regard to Crown dues upon pulp wood. Former tenders called for a bonus in cash on the part of the bidder. The new tenders requires the bidders to state the amount per cord on pulp wood and per thousand feet, board measure, on pine that they are prepared to pay as a bonus, in addition to the dues of forty cents per cord for spruce and twenty cents per cord for other pulp woods and two dollars per thousand feet, board measure, for pine. This is the first time that a stipulation of this sort has been included in a pulp wood tender

in Ontario though the same principle has been applied in connection with timber lands for some years.

The activity and promising future of the pulp and paper industry is reflected also in the rising quotations on the stock market for all listed stock of pulp and paper companies and the increased earnings tell a tale of prosperity. No new contracts are being made for sulphite pulp at present and will not be until the end of the year, as both buyer and seller cannot as yet accurately gauge conditions and outlook for the coming twelve months.

In the rag and paper stock market manila and whites are scarce and in good requisition, with prices tending upward. Roofing stock is quiet and the demand for all kinds of cotton rags, new and old, is not very active just now. Board prices are very stiff and a change is expected at the end of the month. Deliveries are two and three months behind.

The following are the Toronto prices:

Paper.

News (rolls) \$2.50 up, at mill, in carload lots.	
News (sheets), \$2.75 to 3.00, at mill, in carload lots.	
Book papers (carload), No. 3, \$7.00.	
Book papers (ton lots), No. 3, 7.00c to 8.00c.	
Book papers (carload), No. 2, 8.50c to 9.00c.	
Book papers (ton lots), No. 2, 8.75c to 9.50c.	
Book papers (carload), No. 1, 9.00c to 9.75c.	
Book papers (ton lots), No. 1, 9.25c to 10.00c.	
Sulphite bonds, 11 cents up.	
Writings, 9 cents up.	
Grey Browns,	\$3.75 to \$4.25
Fibre,	\$6.50 to \$7.50
Manila, No. 1	\$7.00 to \$8.00
Manila, B.,	\$4.50 to \$5.10
Unglazed Kraft,	\$8.50 to \$9.50
Glazed Kraft,	\$9.00 to 10.00
Tissues, bleached,	\$1.60 to \$2.30
Tissues, (manila or white sulphite)	\$1.20 to \$1.60
Tissues, cap.	80c to \$1.15
Natural, greaseproof,	13c to 16c
Bleached grease-proof	20c to 25c
Drug papers, whites and tints,	9c to 12c
Paper bags, Manila	30% discount.
Paper bags, kraft,	15% discount.
Confectionery bags,	15% discount.

Pulp.

	F.O.B. Mill.
Ground woodpulp	\$26.00 to \$27.00
Easy Bleaching Sulphite	5¾c to 6c
Sulphite, news grade,	4¾c to 5¼c
Sulphite (bleached),	7¾ to 8¼c
Sulphate	5½ to 6c

Paper Stock.

No. 1 hard shavings	\$4.00
No. 1 soft white shavings	\$3.40
No. 1 mixed shavings	80c
White blanks,	\$1.22½
Heavy ledger stock,	\$2.35
No. 1 book stock,	\$1.57½
No. 1 Manila envelope cuttings	\$2.20
No. 1 print Manilas,	\$1.10
Folded news	72½
Over issues	72½
No. 1 clean mixed paper,	65c
Old white cotton	\$4.50

Thirds and blue	\$2.50
No. 1 white shirt cuttings	\$7.25
Black overall cuttings	\$2.75
New light flannelettes	\$5.50
Ordinary satinets and flock,	\$2.10
Tailor Rags	\$2.00

MONTREAL MARKETS.

Book—News—Writing and Posters.

Roll News, \$2.25 to \$2.40 per 100 pounds at mill for large orders; \$2.50 up, for small orders.
Ream News, \$2.40 to \$2.50 per 100 pounds at mill for large orders; \$3.00 up for small orders.
No. 1 Book, 7.50 to 8.25.
No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.
No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.
Writings, 6.95 to 10.
Writing Manila, 6.95.
Cover papers, 11 to 14½c, according to colors wanted.
Colored Poster, 6½ to 7½c.
An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.. . . .	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs...	3.40	3.65	3.90

NEW YORK MARKETS.

New York, N.Y., Sept. 28, 1916.

Up to the present time, there have been absolutely no possibilities that the ground wood pulp market would show any tendencies to ease up within the next few months. The fact is that conditions have been gradually growing worse and that consumers are beginning to fear for the future. That the consumption of ground wood is greater to-day than it has ever been in the history of the trade, is evident to anyone who has been following recent activities of the markets. Yet, the pulp mills are nearly all sold-up and those which have stock to offer, have but little, for which they are asking top market prices. All of the mills are working to as great a capacity as is possible. However, in a number of instances it is impossible to keep certain machines in constant operation, therefore making it necessary for considerable tonnage to be left out of the market at a time when it is most needed. That the situation has not grown worse than it is, is the marvel of those who are well acquainted with the events of the past three or four months. In previous years, it has been possible for the pulp mills to recuperate from any great demand. While they

would not be able to operate full through the summer, still the demand would diminish and thus give the manufacturers a chance to store up some stock. This year, however, the mills have no such opportunity. During the entire summer, the demand for ground wood was unusual—it was far beyond the supply through every period of the time. Now, with the entrance of the fall season, the demand continues with indications of becoming greater, while the supply is, in many instances, falling short. Many parts of the country are now suffering from dry spells and, as a result, it has not been possible to keep all of the machines in operation. The tendency is very strongly upward and it is understood that some very high prices have already been paid for small lots of ground wood, to various Western mills. One rumor gave it that \$35 was paid for a ton of ground wood. While this may be true, it cannot be taken as standard for the market. However, it shows the inclination of prices.

No material improvement has been noted in sulphites. In fact, it is still very evident that the demand is far greater than the supply and that there is no immediate likelihood that this condition will change. Pulp handlers are kept busy to get supplies and are often forced to report to such plans as paying big premiums to get options on certain lots. The available supplies of pulp on American docks are practically inconsequential. While, in some sections, imports are considered fair, they are far from sufficient to help conditions along. And what is more, the greatest part of the Scandinavian imports, if not the entire imports, are on old contract and are going into immediate consumption, thus making it impossible for the mill, in need of pulp, to take them into consideration at all. Many of the importers say that they are having difficulty in inducing the Swedish manufacturers to ship to this country. They are all willing and apparently eager to avail themselves of the protection of the embargo — and then get more money for their stock abroad. No real news has been heard of the present relations of the Scandinavian pulp producers with the English paper manufacturers. The increased quantities of Canadian pulp imports have done much to keep the domestic industry from suffering as severely as it certainly would have suffered if this stock could not have been secured.

Foreign bleached sulphite is still quoted at 8½c to 10c, which is a nominal price, for it is not always possible to get stock even at these figures. While the demand for bleached is strong, it is apparent that consumers have been doing their best to get along with substitutes and are succeeding to a certain extent. This fact has, however, not weakened the market in the least nor has it influenced the present tendency. Domestic bleached is held at from 6¾c to 7c, with but little available. Most of the mills are sold ahead for the balance of the year and are, therefore, unable to offer any stock. Foreign unbleached at 5c and higher. As in the case of bleached, this price is practically nominal. Domestic bleached is quoted 4c and higher, and is very firm. Easy bleaching pulp is in good demand, but the supply is very limited at 6c to 6½c. The situation in krafts seems to have been aggravated a little within the past few weeks. It is true that the supply has increased to some extent of late, because the mills have been working to capacity and several machines have been switched to this grade, but there has been no difference in the amount of stock available to the trade. The greatest part of this increase has

been consumed by the manufacturers themselves. Present quotations are about 5½c to 5¾c.

The condition of the rag market remains about as it was reported in our last issue. Business is going on in a sort of regular, but dull fashion. The mills appear to be buying but give the impression that they are well supplied and that, if the prices are boosted, they can well afford to wait. A little added activity is noted in roofing stock. This grade is quoted at about 2¼c. New rags range from 6¾c to 9¼c. Old whites, of the number one class, are at about 6c; house soiled whites, at 4c to 4½c; street soiled whites, at 3¼c to 3¾c, thirds and blues, at 3¾c to 4c; black stock-ings, at 3½c to 4c.

Considerable activity is noted in the waste paper market. This market is benefitting from the fact that many manufacturers are resorting to the scheme of reclaiming paper stock in place of using certain grades of rags and wood pulp. Hard white shavings are at 3½c to 4¼c; soft white shavings are at 3½c to 3¾c; magazine stock, at 1½c to 1¾c; solid ledger, at 2¼c to 2½c; old krafts are still at 2¾c to 3c. Mixed newspapers are selling at 60c to 65c per hundred pounds, strictly over-issue are going at 90c, and strictly folded, at 80c.

To describe conditions in the paper market is merely to repeat what has been said during the past few months. The demand is still much greater than the supply. In practically every grade, the mills are being kept operating at capacity and yet comparatively little headway is being made in the way of catching up with orders. For the manufacturers are still far behind—some of them are just filling orders which they received three, four and five months ago. The fall business is about commencing and there is every indication that it will be substantial, which means that the mills will not find any relief for the rest of this year, to say the least.

The newsprint market is considered the miracle of the industry. Despite all that has been said of curtailing consumption and despite all that has been done to this end by the publishers throughout the country, the mills report that the demand is as great as ever and that they are unable to keep up with it. The reports of the News-Print Manufacturers' Association show that in some sections the mills are shipping 116% of their production. In other words they are drawing so heavily on any reserve stocks which they have, that, there is now very little left in the store houses.

Further advances in wrappings have been recorded recently, showing that this market is more active and firmer than ever. The demand is strong, but supplies are scarce, for few mills have stock to offer. Tissues are "out of sight." The prices asked are ridiculous. However, even at a dollar a ream, it is not always possible to secure a good white tissue. Book papers are still pretty well sold ahead and prices show no inclination of lowering. Boards are firmer than ever and are on the ascendance.

R. W. JOLLY.

CANADA'S EXPORT OF FOREST PRODUCTS.

Canada's exports of forest products during the twelve months ending July, 1916, were valued at \$54,642,375. During the twelve months ending July, 1915, the exports of forest products were valued at \$44,068,654, and during the twelve months ending July, 1914, the value was \$43,400,015.

THE NORTHERN ONTARIO FIRE.

(By Robson Black)

The most disastrous forest fire in the history of Canada broke across the "Clay Belt" region of Northern Ontario on the afternoon of Saturday, July 29th. Within eighteen hours, more than 200 lives were forfeited, 1200 square miles of bush and clearing devastated, and the thriving towns of Cochrane, Porquis Junction, Iroquois Falls, Nushka, Kelso, Matheson and Ramore badly damaged or swept wholly from sight. What the loss means in terms of dollars is vaguely stated as between three and six millions, exclusive of forest damage. Hundreds of settlers' homes, their standing and harvested crops of hay, barley, oats, wheat and potatoes, with much live stock, farm implements and the hard-won accumulation of years, were turned to drifting ashes and chunks of charcoal. The Temiskaming and Northern Ontario Railway lost one hundred freight cars, on some of which the steel wheels were melted by the sulphur cargo to shapeless pools. Railway stations in the heart of the fire were reduced to twisted skeletons, and mining companies lost every structure above the earth's level.

This is the greatest catastrophe of the kind, from the point of view of lives lost, that has ever occurred in Canada. The nearest approach was the Porcupine fire in 1911, in the same district, where 84 lives were lost. So far as records show, only two forest fires have ever occurred on this continent which caused the loss of more lives than the "clay belt" fire of 1916. One was the Peshtigo fire, Wisconsin, in 1871, when some 1,500 people perished. The Hinckley, Minnesota, fire of 1894 caused the loss of 418 lives.

PUSEY & JONES COMPANY REORGANIZE.

Particulars concerning the recent reorganization of The Pusey & Jones Company, Wilmington, Del., are given in a late number of the Super-Calendar.

The resignations of the following officers have been tendered and accepted: Stirling H. Thomas, president; John M. Mendinhal, vice-president; Elbert H. Neese, vice-president; Robert H. Richards, director. In their stead have been elected the following:

Christoffer Hannevig, president; Henry Lysholm, vice-president; Ralph James M. Bullova, secretary; H. E. Norbom, treasurer and managing director; C. Stewart Lee, assistant managing director.

UTILIZATION OF WASTE SULPHITE LIQUOR.

Experiments made with a small-scale plant capable of treating 500 gallons led to the following simple process for the production of alcohol from sulphite-cellulose waste lye, which has several advantages over Ekstrom's process, among others the fact that no special yeast is required. The liquor is treated with a quantity of dilute (1 : 3) sulphuric acid equivalent to its content of total sulphurous acid, and concentrated, preferably in vacuo, at a temperature not above 85 deg. C., to half its bulk, the sulphur dioxide expelled being utilized for the preparation of bisulphite solution. The concentrated liquor is treated with a small quantity of potassium permanganate ($\frac{1}{2}$ oz. to 500 gallons of original liquor), to oxidize any remaining sulphurous acid, made neutral to litmus by means of lime, allowed to settle, and the clear solution acidulated with 0.1 per cent of sulphuric acid, and fermented with brewers' yeast for 40-60 hours at 27 deg. C., the liquid being kept agitated. The concentrated liquor contains about 6 per cent of fermentable sugar, and the yield of alcohol ranges from 0.76 to 0.86 per cent by volume on the original liquor; in a properly controlled plant, with precautions against volatilization, a yield of 1 per cent of alcohol should be attainable. The residue left after distillation is not noticeably toxic to fish when diluted.—Journ. Soc. Chem. Ind.

WHAT IS SULPHITE?

Almost everybody in the printing and allied trades can answer this question, but for the benefit of readers who are not quite certain over the matter it may be explained that sulphite pulp is obtained by a chemical process in which acid is used. The wood cells are separated from the other constituents and formed into cellulose, as it is known in trade, sulphite pulp. When the same process is conducted with an alkali the product is known as soda pulp.—Printer and Publish-

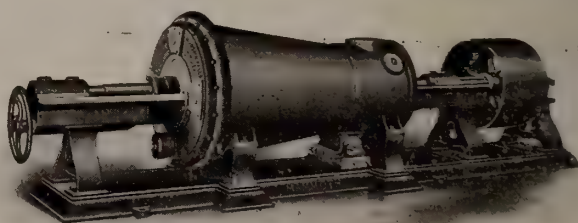
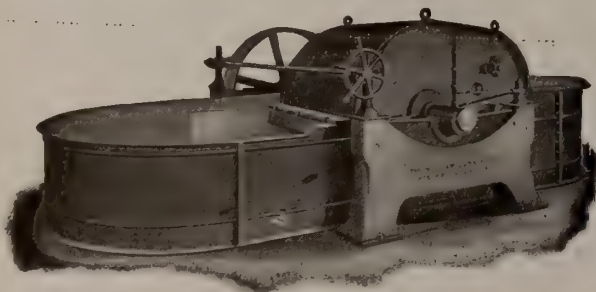
PAPER MILL FOR PORT ARTHUR.

An agreement has been signed between the city of Port Arthur and an eastern Ontario syndicate, under which a pulp mill will be established in Port Arthur. Work is to be started immediately. The mill is to have a capacity of 150 tons per day. The first unit of fifty tons will be producing next June. The company gets its site from the city and buys its power from the municipality. The plant is to be located on the north water front.

Beating Engines, Cooking Engines, Washing Engines, Mixing Engines
IRON OR WOOD TUBS

JORDAN ENGINES

7 sizes Belt or Motor Driven



Board Machines, Dusters, Stuff Chests, Pumps, etc.

THE NOBLE AND WOOD MACHINE CO.

HOOSICK FALLS, N.Y.

Soluble Chinese Blue

By a very fortunate purchase of Raw Materials of which we have a considerable quantity yet to arrive, we are able to offer our standard qualities of Chinese (Prussian) Blues at favorable prices.

Full Strength Brilliant Tone
Attractive Price

Samples and Quotations cheerfully given

We manufacture Paint and Varnish Products for every purpose

WHITE LEAD

CEMENT STAINS
CONCRETE PAINTS

FACTORY ENAMEL WHITE
STRUCTURAL PAINTS

Manufactured by

BRANDRAM-HENDERSON
LIMITED
MONTREAL · HALIFAX · ST. JOHN · TORONTO · WINNIPEG

Do You Know That

Claflin Continuous Beaters

Do better Beating and Brushing than Tub-beaters, and that you can save $\frac{2}{3}$ of the cost, $\frac{1}{2}$ the power, and $\frac{3}{4}$ of your floor space, by using them?

They Work Successfully on all Kinds of Stock

Write for full information

THE CLAFLIN ENGINEERING COMPANY,
LANCASTER, OHIO

Agents—Laurie Machinery Co., Limited, Montreal.

FOR SALE

FOUR BEATER ROLLS (E. D. Jones & Co.). Two 49-inch Diameter by 54-inch Face and Two 47-inch Diameter by 52-inch Face Two Variable Speed Engines about 40-H.P. Parts of Wet End of 100-inch Four-drainer Machine and High Speed Engine for Driving same. Write Box 128, Pulp and Paper Magazine.

WANTED—Wet Machine in good order. Apply Box 129, Pulp and Paper Magazine, 45 St. Alexander Street, Montreal.

Tenders for Pulpwood and Pine Limit.

Tenders will be received by the undersigned up to and including the 1st day of December next for the right to cut pulpwood and pine timber on a certain area situated on the Pic River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet, board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario—the paper mill to be erected when directed by the Minister of Lands, Forests and Mines.

Parties making tender will be required to deposit with their tender a marked cheque, payable to the Honorable the Treasurer of the Province of Ontario, for twenty-five thousand dollars (\$25,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$25,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned,

G. H. FERGUSON,

Minister of Lands, Forests and Mines.

Toronto, August 28th, 1916.

N.B.—No unauthorized publication of this notice will be paid for.

Sept. 15, Oct. 1, 15, Nov. 1, 15.

Operate Your Plant at Maximum Efficiency

Pulp and Paper Mills, particularly under present conditions, require that the power generated be transmitted without loss to the various machines. Present demand and prices make it absolutely essential that there be no lost power, and **AMPHIBIA** leather belting will transmit your power without loss, even on your Fourdriner Machines, Jordans, Beaters, etc., where the variation of load makes the service severe.

AMPHIBIA

Is the result of 40 years close study of the tanning and manufacture of leather belting. **AMPHIBIA** is produced under the strictest inspection, every joint is as rigid as the leather itself. The finish makes the belting grip the pulley and prevents slipping, guaranteeing no lost motive power.

"Leather like gold has no substitute."

THE GREAT AMPHIBIAM

An attractive little booklet, written by the Right Hon. Winston Churchill, dealing with the story of Britain's double defence against Prussian oppression sent free for the asking. It's well worth reading. Send for your copy to-day, as the supply is limited.



Sadler & Haworth

Tanners and Manufacturers of Leather Belts for 40 years

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38 Wellington St. E.

MONTREAL

511 William St.

VANCOUVER

107-111 Water St.

ST. JOHN

149 Prince William St.

WINNIPEG

Galt Building

To insure satisfaction state where belt is to run.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Acid Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Air Compressors:**
Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Barkers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
- Bearings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Beaters:**
Bertrams Ltd., Edinburgh, Scotland
Clafin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Belting:**
Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.
- Belt Conveyors:**
The Jeffrey Mfg. Co., Montreal Que.
- Bleaching Powders:**
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.
- Bleach Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
- Blowers:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.
- Boilers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Boilers—Water Tube:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Brass Wire Cloth, Fourdrinier Wires:**
Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
- Cable Conveyors:**
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Calender Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn
- Carriers:**
Northern Crane Works, Walkerville, Ont.
- Cars, Dump and Flat**
Fraser, W., Montreal
Sessenwein Bros., Montreal
- Castings:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.
- Chain Crane:**
Northern Crane Works, Walkerville, Ont.
- Chain Blocks:**
The Jeffrey Mfg. Co., Montreal Que.
- Chain Conveyors:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chain Drives (Silent and Steel Roller):**
Jones and Glassco, St. Nicholas Building, Montreal.
- Change Speed Gears:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Chemicals, Colors, Etc.:**
Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chimneys:**
Canadian Kellogg Co. Ltd., New York.
- China Clay:**
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chippers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Disintegrators:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Coal and Ash Conveyors:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Condensers—Barometric:**
Canadian Kellogg Co. Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Conveying Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls:**
Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
- Couplings:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cranes:**
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Electric:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Cranes—Hand Power:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cranes—Overhead Travelling:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cut Gears:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Cylinders:**
Bertrams, Ltd., Edinburgh, Scotland.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Covers:**
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Moulds:**
Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Dandy Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.
- Diffusers:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Digesters:**
Canadian Kellogg Co. Ltd., New York.
- Digester Lining:**
Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Dryers:**
Bertrams, Ltd., Edinburgh, Scotland.
- Engines:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Evaporators:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
- Exhausters:**
The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery:**
Process Engineers, Ltd., Montreal, Canada.
- Exporters:**
Parsons Trading Co., New York, N.Y.
- Felts:**
Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Montreal, Que.

MILL SUPPLIES---Continued

Filters:

Darling Bros., Montreal, P. Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Gears:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grate Bars:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Hangers:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Meaters:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.

Iron Castings:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.

Knives:

Arcton, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
May, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Machines, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Overhangs:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotive:

Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built

Sessenwein Bros., Montreal
Fraser, W., Montreal

Refrigerators:

Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Chenningtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P. Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmsley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. Elias Wilkinson, Toronto, Ont.

Rollers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Roller Stocks:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Piping—High Pressure:

Canadian Kellogg Co. Ltd., New York.

Piping—Hydraulic:

Canadian Kellogg Co. Ltd., New York.

Piping—Power Plant:

Canadian Kellogg Co. Ltd. New York.

Piping—Welded:

Canadian Kellogg Co. Ltd., New York

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay Ont.
Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulleys:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P. Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Radial Brick:

Canadian Kellogg Co. Ltd., New York.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Reinforced Concrete:

Canadian Kellogg Co. Ltd., New York.

Rope, Cotton and Manila:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Safes:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal, Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

Shafting:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Shredders:

The Jeffrey Mfg. Co., Montreal, Que.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

MILL SUPPLIES---Continued

Soluble Blue:

Brandram-Henderson Ltd., Montreal.

Spiral Conveyor:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Montreal, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Montreal, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Stacks:

Canadian Kellogg Co. Ltd., New York.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Penmans, Ltd., St. Hyacinthe, Canada.

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Tanks—Welded:

Canadian Kellogg Co. Ltd., New York

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Jones & Glassco, Montreal, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Waterous Engine Works Co., Limited Brantford, Ont.

Travelling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurtemberg, German

Valts and Valt Doors:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Taylor, J. A., Montreal, Canada.

Westbye, P. F., Peterboro, Canada.

The Waterous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R. Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City;

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, O. t.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Eddy Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hangling:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
(See also Kraft).

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER MILLS

Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and
Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Teese & Persse, of Alberta, Limited.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Teese & Persse, of Alberta, Limited.

VANCOUVER, B.C.:

Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

H. G. Smith, Ltd.
Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliffe Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104 Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Murton C. A. 34 King William.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

FORT WILLIAM, ONT.:

Tees & Persae.

TORONTO, ONT.:

Barber-Ellis Co., Ltd., 71 Wellington Street W.
Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

MONTREAL, QUE.:

Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. DeWolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill.
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
Beveridge Paper Co., Ltd.
Canada Paper Co., Ltd.
Wilson, J. C. Co., Ltd.
Eddy, E. B. Co., Ltd.
MacGregor, J. C.

QUEBEC, QUE.:

Andrews, F. H. & Son, 64 St. Paul.
Rolland, J. B. & Son, 36 St. Paul.

FOREIGN:

Salomon & Co., Felix, New York City.
Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., England.
Parsons Trading Co., 1 Battery Place, New York.
Pulp and Paper Trading Co., Temple Court Building, New York.
Scandinavian American Trading Co., New York, N.Y.

WANT AND FOR SALE

SALESMAN.—Thoroughly experienced in all grades of pulp, newsprint and kraft papers, seeks connection with mill or jobbing house. References. Address, Box 125 Pulp and Paper Magazine, 35-45 St. Alexander St., Montreal, Que.

WANTED. Two acid makers, wages \$90 to \$110 per month, depending on the ability of the men. Tower system, rotary burners. State experience and furnish references.—Apply Box 123, Pulp and Paper Magazine, 35-45 St. Alexander St., Montreal.

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Advance Engineering Co.....	13
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge Paper Co Ltd.....	60
Beveridge, Jas., Chatham, N. B.....	
Black-Clawson Co.....	
Boving Hydraulic & Engineering Co. Limited.....	6
Bowater, W. V. & Sons, Ltd.....	60
Brandram-Henderson Ltd.....	49
The Bronson Company.....	

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	3
Canadian Fairbanks-Morse Co., Ltd.....	13
Canadian Kellogg Company.....	6
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	13
Capital Wire Cloth Mfg. Co., Ltd.....	60
Carthage Machine Co.....	
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	62
Christie George, Ltd.....	
Churchill & Sim.....	62
Claflin Engineering Co.....	49
Crossley, T. L.....	65

D

Darling Bros., Ltd.....	13
DeCew, J. A.....	64
Dean & Son.....	8
Disston, H. & Sons, Ltd.....	
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	
Ferguson, H. S.....	64
J. Ford & Company.....	62
Fraser, W.....	

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	65
Glens Falls Machine Works.....	6
Goldie and McCulloch Co., Limited.....	

H

Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	14
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	

K

Kimball H. S.....	4
Klipstein, A. & Co., Ltd.....	7

L

Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	

M

Mackinnon, Holmes & Co.....	8
Main Belting Co. of Canada Ltd.....	
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15

N

Noble & Wood Machine Co.....	49
Northern Crane Works, Ltd.....	62
Norwood Engineering Co. of Can. Ltd.....	61

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	

R

Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	8

S

Sadler and Haworth.....	50
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jas. W.....	65
Scott, Ernest & Co.....	
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spielmann Agencies.....	65
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	
Ticonderoga Machine Works.....	6

U

Union Screen Plate Co. of Canada, Ltd.....	62
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	60
Voith, J. M.....	12

W

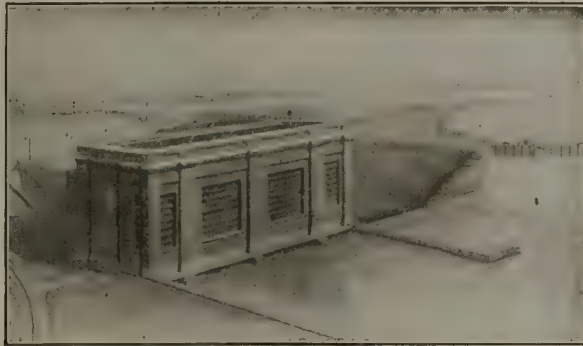
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	11
Wilson-Paterson Co.....	62



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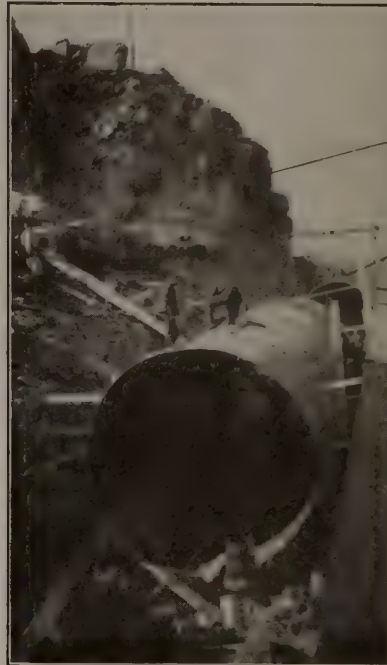
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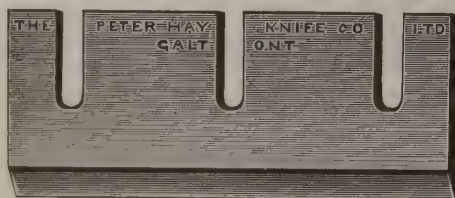
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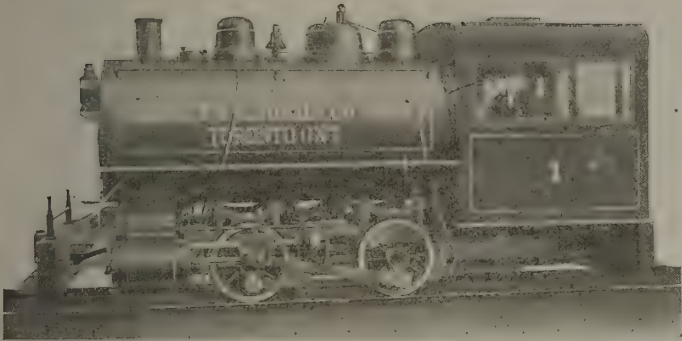


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BEST ENGLISH PULP STONES

from our celebrated DARLEY DALE Quarries,
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For
Pulp and
Paper Mills



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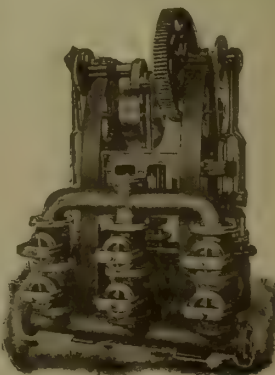


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It also retains the proper amount of moisture in the paper thus eliminating the breaks at the calenders.

This regulator gives you a higher and more uniform finished paper with less calendering.

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PULP AND PAPER MAGAZINE OF CANADA

Special Features

in this Issue:

SOME CHEMICAL AND PHYSICAL
REACTIONS OF ROSIN SIZE
SOLUTIONS.

WHY PAPER IS DEARER.

NEWS

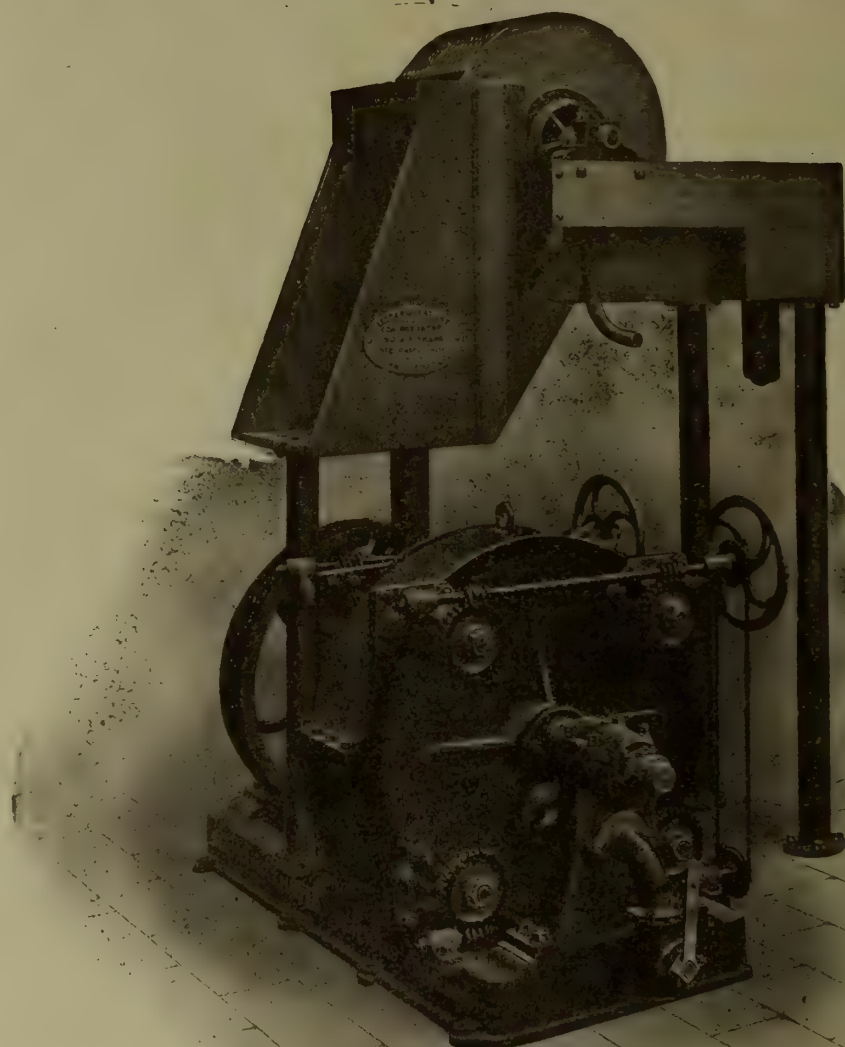
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

Bertrams Limited

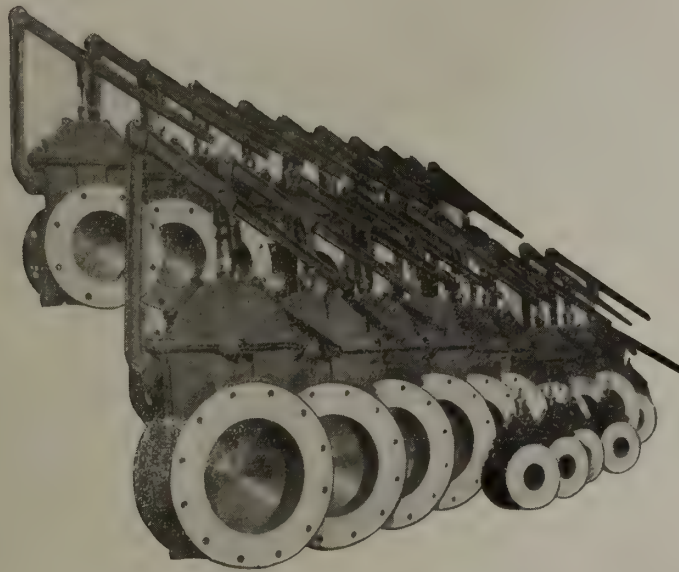


MILNE'S PATENT REFINING ENGINE
(WITH LISTER'S PATENT CONCENTRATOR)
"Code Word" "REFIN CONCE"

THE ACTION OF THIS REFINER IS PERFECT
owing to the fact that pulp will not pass through the second set of Bars
UNTIL PROPERLY REDUCED

Fibres which are sufficiently reduced pass easily through, while the unreduced Fibres
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BEFORE THEY CAN PASS OUTWARDS

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It is much easier to remove the mechanical dirt from your water than to get rid of it after being mixed with the good stock.

THE "IMPROVED" PNEUMATIC FILTER

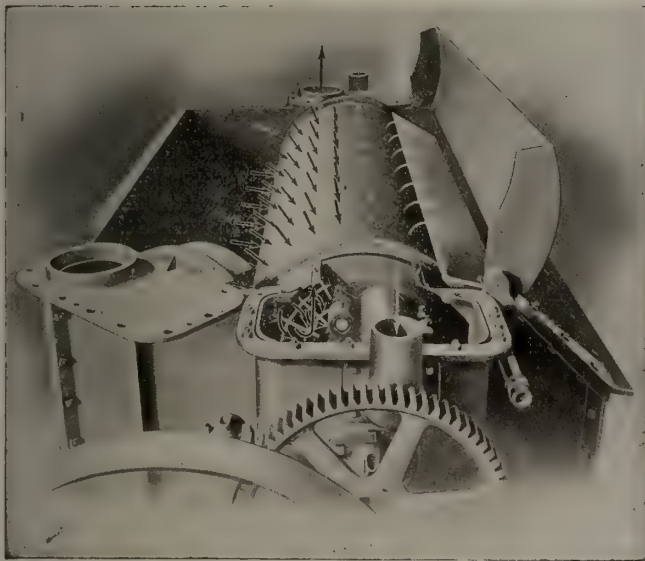
ACTS PERFECTLY FOR THIS PURPOSE

COST

The cost is very low compared with any system of sand filtration and the upkeep is very small.

EFFICIENCY

This machine will remove all mechanical dirt that will show in your paper and needs very little attention.



BLACK ARROWS INDICATE SUCTION. WHITE ARROWS—BLAST OF AIR

The pneumatic filter is compact, has large capacity, is automatically regulated, and is easily installed.

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Manufacturers of

Fourdrinier Wires

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of every description

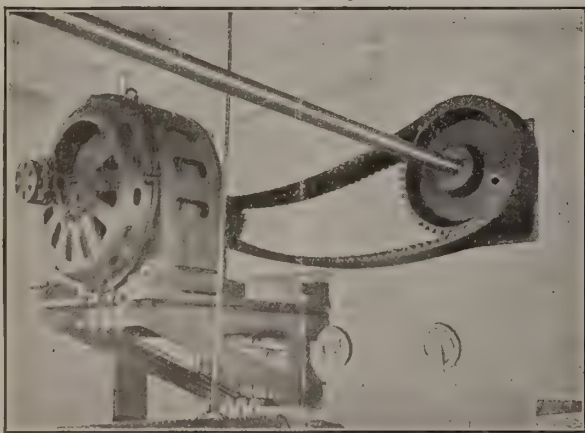


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to use same.

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the SAFEST and BEST material for

LINING of SULPHITE PULP DIGESTERS
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*Panzl Linings are Safest
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They are really acid-proof and practically indestructible.

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Formaldehyde 40 p.c.

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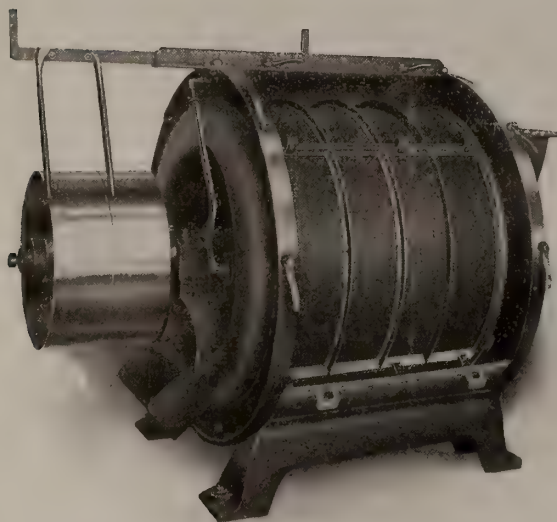
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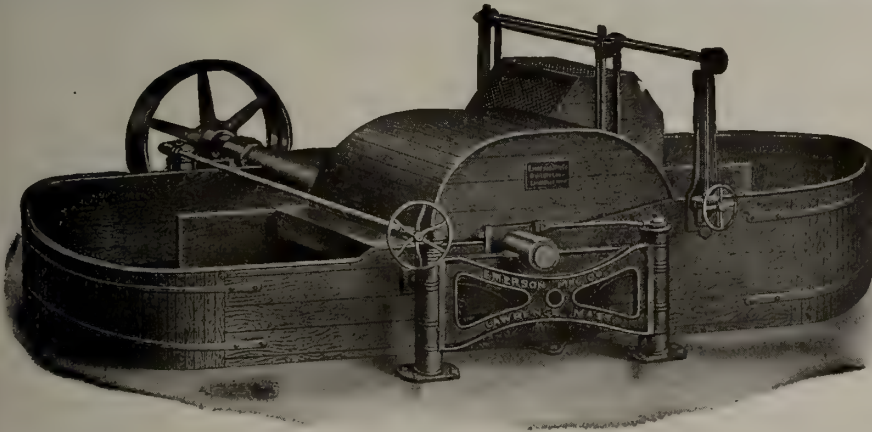
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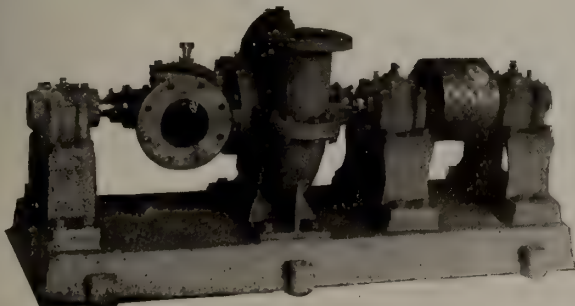
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Barkers Splitters Grinders Wet Machines
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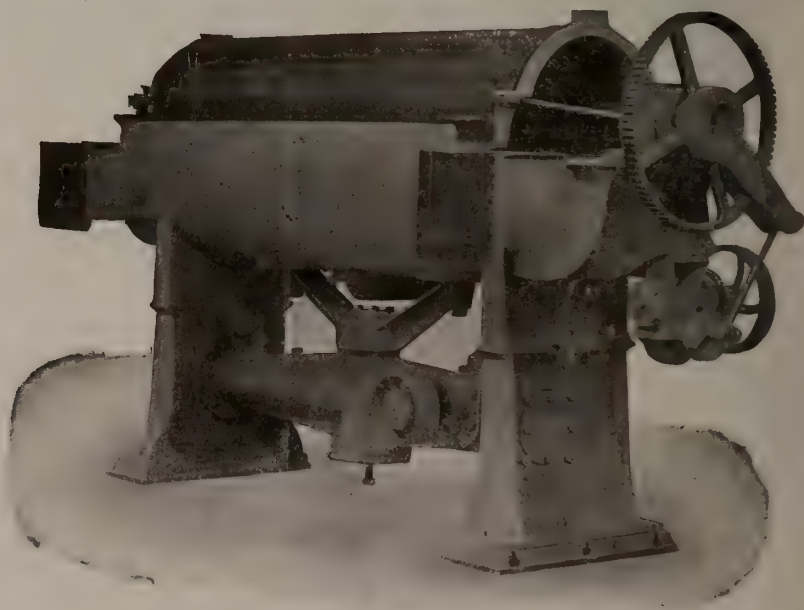
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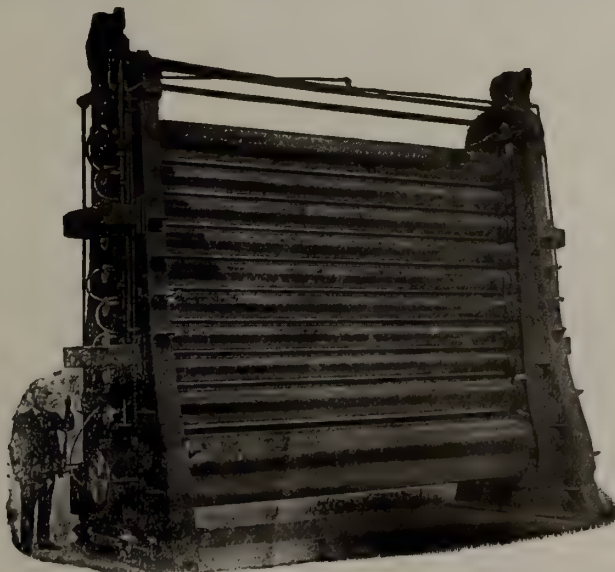
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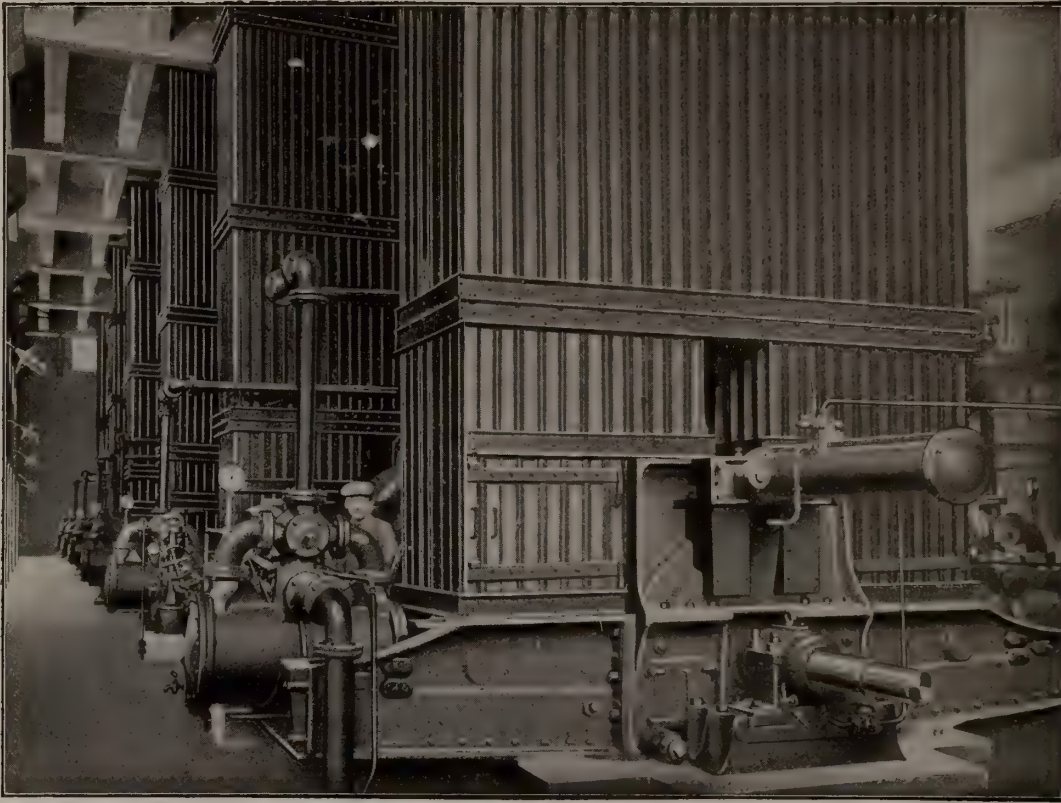


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Lowest cost per ton of product. Very heavy Jackets for long rolls of large diameter.

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**High-Grade
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Built for Service

Complete Rag Room equipments largely in Evidence
in leading mills throughout the United States and
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The Gaara Feltless Wet Machine or Decker save
the pulp that goes to waste in the ordinary decker s

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The mills we represent make Fine Esparto
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**Protecto and Protectocoat
Boiler Preservatives**

may save you 25 to 50 per cent. in your Fuel
and Oil bill without polluting steam.

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PULP STONES**

FROM

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Machined and Fitted

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MONTREAL WORKS

Prince and Brennan Streets



LOMBARD & COMPANY

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Section of Jeffrey Newspaper Elevator Conveyor, mounted on double strands of Roller Chain.

Chains Are Mighty Important Things

If one breaks, it often means an Expensive Delay and Tie-up of a whole machinery equipment.

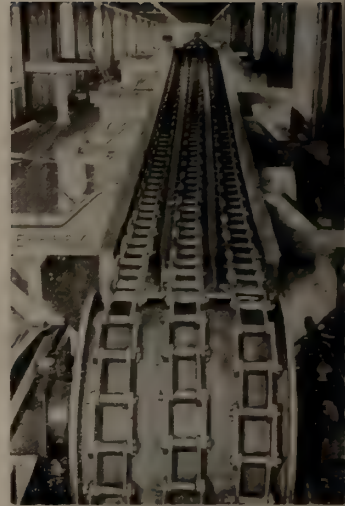
Specify JEFFREY CHAINS

They have a reputation for Great Strength and Long Wearing Service, and are especially built for Heavy Engineering Service.

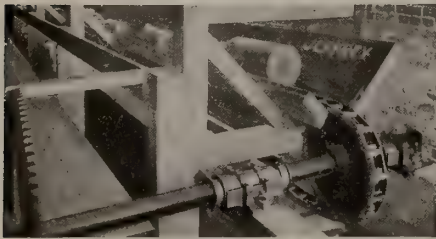
Ask Dept. 5 for Bulletins on our complete line of Standard Chains, Sprockets, Elevators, Conveyors, Revolving Chip Screens, Storage Battery and Trolley Locomotives and Trucks, Shredders, Package Handling Equipment, Coal and Ashes Handling Machinery, etc.

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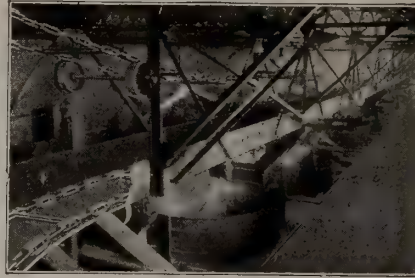
CANADIAN BRANCH & WAREHOUSES - MONTREAL.



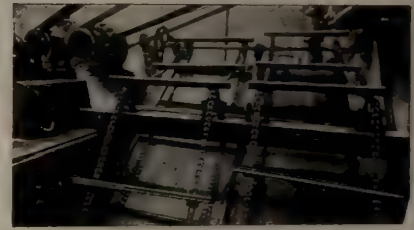
A Series of Plain Chains; for carrying logs direct to stackers, or diverting to Barkers through openings in side of trough.



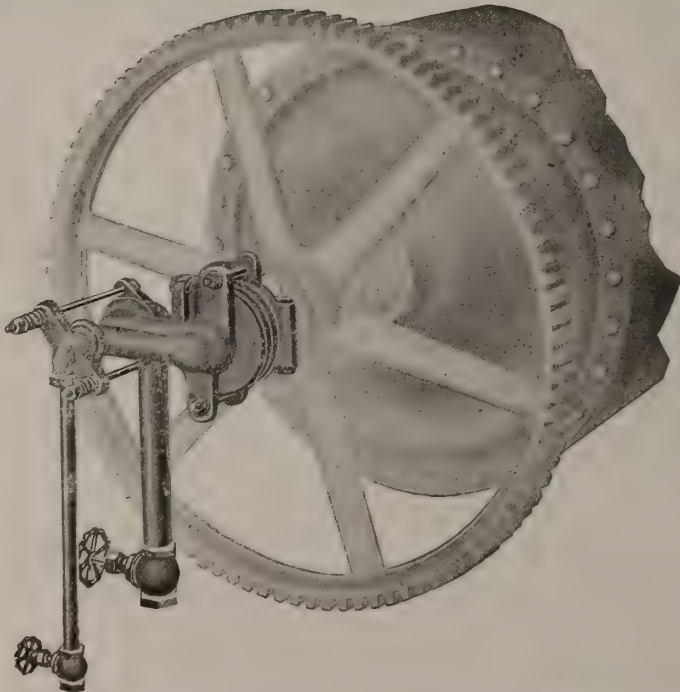
A Jeffrey Square Shank Pin "Hercules" Chain Conveyor handling Pulp Wood.



Steel Chain Conveyor Carrying Cooked Straw over Beaters in Paper and Board Mill.



Wood Sliver Conveyers from Grinders, using Jeffrey Detachable Chain.



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Penmans FELTS

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For Pulp and Paper Mills

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"M & W" Improved Wire Guide
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Send in your order now and prove this to your satisfaction.*

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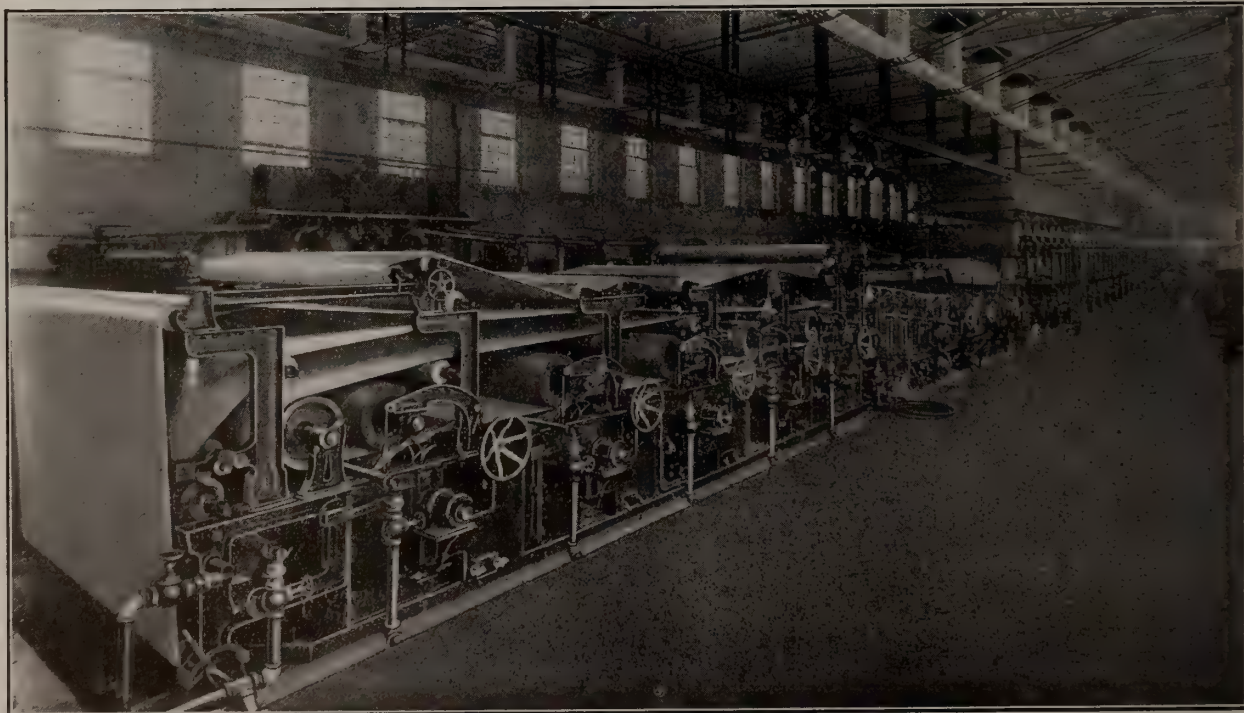
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THE "EFFICIENCY" LAYING MACHINE GIVES RESULTS; INCREASES THE CAPACITY OF THE CUTTER AND LAYS THE PAPER PERFECTLY.

Why not adopt this simple device?

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WORCESTER, - MASS.



Typical Modern Box Board Machine

—BUILT BY—

Downingtown Manufacturing Co., East Downingtown, Pa.

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E. D. JONES & SONS CO., PITTSFIELD, MASS.MANUFACTURERS
—OF—**PAPER MAKING MACHINERY
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Horizontal Stuff Chests	
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Our Combination Emptying Valve and Dam and the Wallace-Masson Hydraulic Beater Roll Regulator, both being covered by Canadian Patents controlled by us, can be obtained from the Canadian Boomer and Boschert Press Co., Limited, 18 Tansley Street, Montreal, P.Q., Canada, they now being the sole manufacturers of the above articles for the Canadian requirements. Write them or us for full particulars and prices

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Plain, Wagg's
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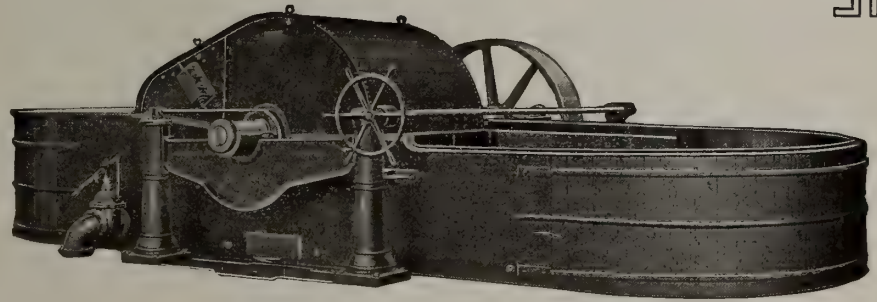
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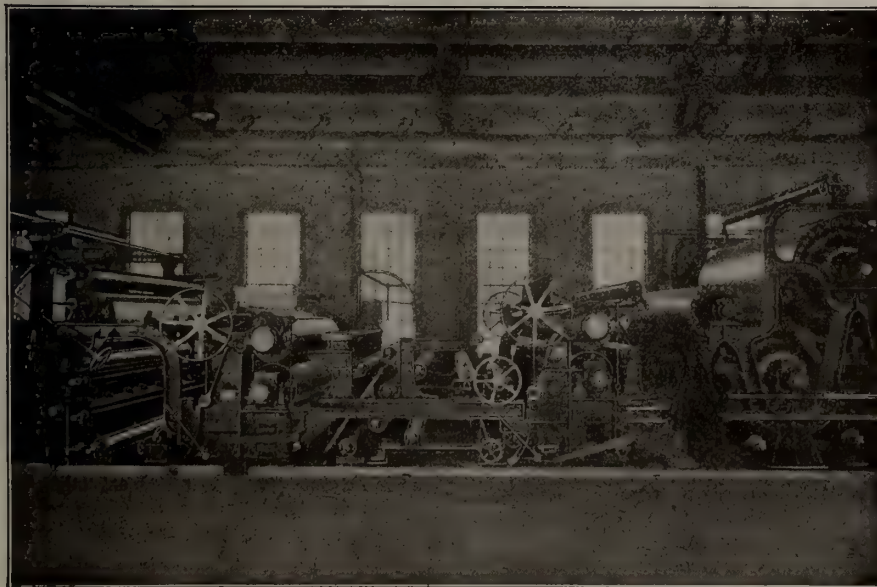
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Sheet Steel, Solid Steel,
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Patented Wooden Sectional Suction Box Covers. Warner's Patent Metal Sand Catcher for Beating and Washing Engines

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*Send for our bulletins
describing this machine*

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LINK BELTING

*Made of Strong, Clean
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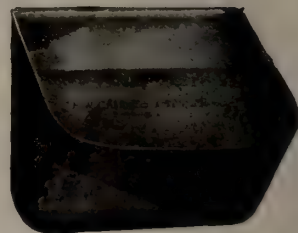
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A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
the Canadian Pulp and Paper Association*

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VOL. XIII.

MONTREAL, OCTOBER 15, 1916

No. 20

PULP AND PAPER MAGAZINE TO BE A WEEKLY.

Arrangements have now been completed for the turning of the Pulp and Paper Magazine into a weekly publication, this forward step to be made on the first of January, 1917.

Four years ago the present publishers of the Pulp and Paper Magazine purchased that Journal from the Bigger & Wilson Company. It was then a small sized paper, published once a month. The first step taken by the new publishers was to enlarge its size to the present dimensions and publish it twice a month. Now a second forward step has been taken and the publication will shortly appear as a weekly.

No better evidence of the prosperity and progress made by the pulp and paper industry can be given than that furnished by the Pulp and Paper Magazine. It has grown in size, in circulation, in influence, and in usefulness, and to-day is the official organ of the technical section of the Pulp and Paper Association, and occupies a commanding place among the Pulp and Paper Publications on the Continent. Under the leadership of the Pulp and Paper Magazine the Canadian Pulp and Paper Association was formed, the Forest Products Laboratory at McGill University created, and the Technical Section of the Pulp and Paper Association made a possibility.

Much of the success which has come to the Pulp and Paper Magazine must be attributed to the two editors who have given it their best services, namely Mr. A. G. McIntyre and Mr. Roy Campbell. As editors of the Pulp and Paper Magazine, they both have done much to further the best interests of the industry, and those associated with it.

Arrangements have been completed whereby Professor J. Newell Stephenson, now head of the Forestry Department of the University of Maine at Orono, will take over the editorship of the Pulp and Paper Maga-

zine when it launches on its career as a weekly. Some facts regarding the new editor appear elsewhere in this issue.

THE PRICE OF PAPER.

A somewhat serious crisis has arisen here in the relationship between the newspaper publishers and the news print manufacturers. A few days ago a meeting of the Canadian Press Association was held in Toronto at which the whole paper question was thoroughly discussed and a representative committee delegated to visit Ottawa and register before the Minister of Finance their protests in regard to the shortage of paper in Canada, and the mounting prices of the same. In Ottawa they were met by representatives of the Pulp and Paper Association, and the whole situation was carefully considered before the Minister and also by the two organizations as separate bodies.

The newspaper men complained that they were unable to secure new contracts for any length of time, and that the prices asked for the supplying of white paper were prohibitive and if paid would mean the collapse of many newspapers. They urged upon the Government that an inquiry should be instituted into the cost of manufacturing news print in Canada and, following that, such steps be taken by the Government as it should find necessary to safeguard the supply of news print for Canadian publishers. The publishers suggested to the Government that either an embargo or export duty be placed on white paper or that the Government fix a maximum price above which manufacturers would not be allowed to charge Canadian publishers.

In refutation of the publishers' statements, the news print manufacturers pointed out that the attack on the

part of the publishers had come without warning and that they had not consulted or tried to negotiate with the news print manufacturers. They further pointed out that the cost of everything entering into the manufacture of paper had advanced in price, that old trade channels had been upset, and that there was a great deal of uncertainty regarding the future cost of paper making materials. The manufacturers agreed to call a meeting of all their members and thoroughly discuss the matter and later meet the publishers in a last effort to arrive at a satisfactory solution. It is understood that the manufacturers are asking an increase of from 25% to 33% over the figures now prevailing, and if the publishers do not see their way clear to accept these terms the manufacturers will then ask for a Government inquiry into the cost of paper making, feeling satisfied that such an investigation would vindicate them in the stand they have taken.

There is no doubt but that manufacturers of news print are being unjustly blamed for a condition of affairs over which they have no control. They are not arbitrarily increasing the price of white paper. Everything entering into the manufacture of news print has advanced in price; labor is scarce and commands higher wages; dye stuffs have advanced to almost unheard of prices; in copper wire paper men are competing against munition makers while a similar story can be told in regard to every ingredient entering in their finished product. In addition to that a sudden and unprecedented demand resulting from improvement in business and a presidential election in the United States has made the consumption of paper exceed production. Further, the war has interfered with regular channels of trade and has shut-off the whole of continental Europe from the markets of the world with the result that publishers who formerly depended on Europe have turned to Canada and the United States in an effort to have their needs supplied.

The situation is undoubtedly embarrassing and may possibly work hardships to some publishers, but the whole of the world's business fabric is confronted with extraordinary conditions. It is as unreasonable to blame the manufacturers of news print for the advance in the cost of white paper, as it would be to blame the bridge builder or the man who erects skyscrapers for advancing the price of steel. In the last analysis it is the war which is to blame. The advance in the cost of news print is not an arbitrary procedure, but rather the result of world conditions over which the paper makers have no control.

THE GATHERING IN NEW YORK.

The over-worked words, co-operation and service, best describe the spirit of the recent gathering held in New York, under the auspices of the American Chemical Society. The affiliated organizations such as the

technical section of the Pulp and Paper Association met at the same time, and their deliberations were permeated with the same spirit as characterized the chemical organization.

Hundreds of the best chemical men on the continent, technical experts from pulp and paper mills, college men from all the great universities, and other interested in the spread of technical and chemical knowledge, gathered in New York and gave their best. Men who had experimented for years in the quiet of their own laboratories, made public the results of their patient research work. Technical experts and college men vied with practical mill men in revealing the things which they had found to be of benefit in the working out of the manufacturing problems of the day. There were no secrets, the cards were laid on the table, and men who found a certain line of work, or policy, or experiments beneficial, frankly and freely made public the result of their findings.

The chemists felt that it was "up to them" to make this continent independent of Germany in chemical research. The result of their two years of effort were simply beyond belief; even the chemists themselves were surprised at the wonderful progress that had been made in supplying dye-stuffs and other chemicals that were formerly obtained from Germany. If the war should continue another year, this continent will be practically independent of the foreign dye-maker.

In much the same way, satisfactory progress was made in connection with the technical work of the Pulp and Paper Association. The papers read, the discussions carried on, and the conclusions reached, marked further progress in the work of the Association, and made it more than ever apparent that the technical man is an increasingly important factor in the modern paper mill. A number of the papers read at the gathering appear in this issue of the Pulp and Paper Magazine.

PRODUCTION AND SHIPMENTS.

The last weekly letter on production and shipment was sent out by the News-Print Manufacturers Association on October 7th.

The report from the Western Territory for the week ending October 7th shows production equivalent to 107.1%, and shipments equivalent to 103.8% of maximum production capacity.

The report from the Canadian Territory for the same week shows production equivalent to 100.1%, and shipments equivalent to 97.2% of maximum productive capacity.

A number of the mills have been running on other grades of papers, and in the case of one large Canadian mill, low water has caused low production.

There has been an increase in inventory during the week in question of 476 cents. It will, of course, be understood that this increase is not surprising, as it is impossible to maintain inventories at the same low figures reported last week.

New Editor of Pulp and Paper Magazine

Professor J. Newell Stephenson, who is to assume the editorship of The Pulp and Paper Magazine on the first of January, 1917, when it changes from a bi-monthly to a weekly publication, is at present head of the paper making department in the University of Maine, Orono, and assistant professor of chemistry in the same university. Like so many paper-makers from south of the Line, Mr. Stephenson realizes that the future of the industry lies north of the 49th parallel, and in casting in his lot with the Pulp and Paper Magazine, he is but following a natural development.

The new editor was born at New Rochelle, N. Y., and educated in the schools of that city and Great Barrington, Mass. After graduating from the high school, he was employed as foreman in the Stanley Instrument Company's Watt Meter Factory. Later an opportunity to learn paper-making

charge of the Paper-Making Department. Two years ago he was made assistant professor of chemistry. While he has never been in actual journalism, Mr. Stephenson was associate editor to his college paper, and has done considerable writing for the various paper trade journals in Canada and the United States, as a matter of fact, the work he did in this connection, led to his appointment as chairman on the Committee on Abstracts of the Technical Committee of the American Pulp and Paper Association.

Mr. Stephenson takes up his duties on January first.

TECHNICAL SECTION MEETING NOVEMBER 24th.

The Annual Meeting of the Technical Section of the Canadian Pulp and Paper Association will be held in Montreal on Friday, November 24th.

Arrangements are being made for a most interesting meeting. The business to be considered is very important, and there will be in addition a programme of papers by experts which should be unusually instructive and also should evoke good discussion. Dr. J. S. Bates, Chairman of the Section has received assurance from Mr. Ellwood Wilson, Forester to the Laurentide Company, of his being able to attend and present a paper on "Forestry in Connection with Pulp Mill Operation." Mr. O. F. Bryant of the Forest Products Laboratories will discuss "Pulp Wood Measurements". Three other papers are expected concerning which announcement will be made in the next issue of Pulp and Paper Magazine.

The original intention was to hold a two day meeting but the members of the Council feel that the extreme activity of pulp and paper mills at the present time precludes the absence of technical men from the mills for longer than one day.

With the papers forthcoming it is expected that this will be one of the very best of the Section meetings. Technical men are strongly urged to make preparations now to be in Montreal for the occasion.

CHEMICAL EXPOSITION.

That the Third National Exposition of Chemical Industries will be a great success is already assured. An additional third floor has already been engaged, and plans are being made to use the fourth floor. In addition it is hoped to have large sections showing the resources of the country awaiting development.

Two prizes have been offered to the students of Cooper Union Art Schools to draw up a poster seal for the next exposition. The designs for this purpose will be finished January 1st next year, and prizes awarded February 1st. All designs submitted and which the Jurp consider fit, will be exhibited during the next exposition.

Among those interested in the pulp and paper lines, who joined the Entente delegation from Ontario in visiting Montreal, Three Rivers and Quebec were W. P. Gundy, managing director of W. J. Gage and Co., and S. J. Moore, President of the F. N. Burt Co., Toronto.



PROF. J. NEWELL STEPHENSEN,
New Editor Pulp and Paper Magazine.

presented itself and was taken advantage of by the subject of this sketch. Encouraged by his employers, the B. D. Rising Paper Company, Mr. Stephenson decided to go to college, and in 1905 entered the Massachusetts Institute of Technology from which he graduated four years later as a Chemical Engineer. The year following graduation was spent at Lawrenceville, N.Y., as a teacher of drawing, then came a post in the Chemical Engineering Department of the Rose Polytechnical Institute of Terre Haute, Indiana. Three years later the University of Maine established a Pulp and Paper Course, and Mr. Stephenson was given

SOME CHEMICAL AND PHYSICAL REACTIONS OF ROSIN SIZE SOLUTIONS

Paper read by J. A. DeCEW at the meeting of the American Chemical Society.

It is quite to be expected that in any class of chemical reactions which occur under such varying conditions as those existing during the precipitation of rosin size in paper mill practice, there will be among the various investigators a certain amount of disagreement regarding the theoretical explanation of what actually takes place. There is also some confusion resulting from the terminology which is commonly used in describing sodium resinate compounds existing in rosin size, as for example, in the use of the phrase "free rosin". The purpose of the following remarks is not to recapitulate the work of other investigators, nor to criticize their conclusions, but to submit a short discussion of the effect upon the chemical reactions involved, of the various physical conditions in which the material may be used.

It is a well known fact that a rosin soap will easily dissolve an equivalent amount of rosin to that which has been saponified, and this extra rosin, whether in solution in the size wax, or whether in suspension in a diluted solution, is still called "free rosin" in the terminology of the trade. In order, however, to distinguish between the various states in which the rosin might exist, it should be divided into three classes, consisting first, of dissolved rosin, second, colloidal rosin, and third, rosin in suspension. The reason for this is that before the rosin soap can be used in the art of paper making it must first be brought into dilute aqueous solution.

If the soap should be readily soluble, then dilution may take place in cold water and consequently the diluting can be carried out within the beater itself. On the other hand, if the rosin soap is not readily soluble in cold water, owing to the fact that it contains a considerable quantity of dissolved rosin, it is necessary to bring it into a sufficiently dilute condition so that no further material separation of rosin will take place when it comes in contact with the paper stock. Obviously the difficulty of carrying out this operation increases in proportion with the amount of extra rosin which is held in solution in the rosin soap.

Authorities disagree as to whether abietic acid is mono-basic or dibasic and it cannot be stated definitely whether rosin which is in complete solution in a rosin soap is there in the form of an acid resinate, or whether it is merely dissolved rosin. It seems to the writer that a fairly intelligible conception is obtained by assuming that a sodium resinate containing rosin in solution, is in fact an acid resinate of the alkali metal and that from this solution insoluble acid resinates of the heavy metals can be produced.

Some interesting data on this subject is recorded by E. O. Ellingson in a paper before the American Chemical Society, 1914, the subject being "Abietic acid and some of its salts." In this investigation he shows clearly that certain insoluble acid abietates were formed when a dilute aqueous solution of sodium abietate was added in small proportions to a dilute solution of a metallic salt.

The salts of Chromium, Manganese, Nickel, Iron, Cadmium, Cobalt, Strontium, Copper, all gave precipitates

carrying an excess of abietic acid. The one exception was the Salt of Aluminum, which under exactly the same conditions produced a basic aluminum abietate. From this it is proven that a neutral sodium resinate solution when poured into a dilute solution of sulphate of alumina, will always produce a precipitate of basic aluminum resinate.

On the other hand, the investigations of Naugebauer, republished in Paper XI, 10-17, shows that a neutral resinate when precipitated with a considerable excess of sulphate of alumina, will produce an acid precipitate containing approximately 33 per cent of rosin excess, and with the maximum amount of alum the rosin acid in the precipitate does not exceed 41 per cent.

If we can accept the results of this investigator then it is evident that insoluble acid resinates containing a limited amount of rosin acids can be produced from a neutral sodium resinate by precipitation with even an aluminum salt.

The results produced with sulphate of aluminum therefore, will depend largely upon the mass action of the materials, chemical equilibrium being established in accordance with the relative amount and acidity of the alum used. In short, if 100 grs. of rosin in the form of a neutral resinate is precipitated with approximately 33 grs. of alum, we will have as a result, a basic alum resinate. If, on the other hand, it is precipitated with 330 grs. of alum, we would have an acid resinate of alumina containing approximately 40 per cent of rosin acid. With less alum excess the amount of rosin acid in the precipitate will be proportionately less.

If the basic aluminum resinates were a satisfactory water repellant then the problem of paper sizing would be a very simple one, and all that would be necessary in practice would be to use the size and alum in proper chemical equivalents. All experience shows however, that when using a neutral resinate for sizing, it is necessary to use a large alum excess in order to obtain a sufficiently water repellant condition in the paper. The inference is that the insoluble acid resinates are essentially the agents which impart to the paper that resistance to aqueous penetration called "Sizing."

Remington and his associates claim that resinate of alumina only, is formed when a neutral sodium resinate is precipitated with alum, even if the alum is used in excess, but that it is decomposed by extraction with alcohol and that this fact leads others to believe that a portion of the rosin is uncombined. These investigators publish the result of 50 tests for sizing paper, from which they draw their conclusions, but it would seem that their methods of making the tests were quite inefficient, inasmuch as they used not less than 5 per cent of rosin, and as high as 12 per cent without always getting sizing results. Now, in mill practice, a very poor size should give results with 3 per cent of rosin, while an efficient size should produce a very hard-sized paper with an equivalent amount. It would seem unwise to form any fixed conclusion from tests which gave such unsatisfactory results.

Other investigators such as, Emil Meuser and Naugebauer, (Paper, June 25th, 1913), and also Otto Kress & Struthers (Paper April 16th, 1913), have demonstrated by exhaustive tests that rosin acids are liberated from a neutral resinate when alum is used in excess and that the amount of these rosin acids may be from 33 per cent to 41 per cent of the total rosin, depending upon the alum excess used.

If an acid resinate of alumina containing 40 parts of rosin acids, can be produced from 100 parts of neutral resinate of soda and 330 parts of sulphate of alumina, then 20 parts of alum will be required to produce the same results from an acid resinate of soda, containing 40 per cent of rosin acids, or with 200 parts of alum one can produce from this an aluminum resinate with 64 per cent of rosin acid.

These highly acid resinates are found to be very colloidal in character and have great capacity for distribution within the paper pulp. They also show considerable resistance to dehydration and are thus able to retain their plastic character while the paper is being dried. Such are the properties that these highly acid resinates seem to possess in addition to their water repellent characteristics.

It has been demonstrated in paper mill tests that the rosin acids alone are thrown out of solution from a rosin soap by means of acid, can also produce sizing results providing that the rosin acids precipitated have a similar colloidal character to the aluminum precipitate. The practical difficulty, however, of obtaining colloidal precipitates when using acid, makes this practice a very uncertain one, for it would be only under very favorable circumstances that this practice could be carried out with success. The same difficulty is experienced when other metallic salts, (e. g.,) the salts of iron or calcium, are used to replace the aluminum sulphate, for the precipitates from these are much more dense and granular than those derived from aluminum.

It would seem therefore that the real necessity for the use of sulphate of alumina for precipitating the rosin is not so much the necessity for forming acid aluminum resinates, but the fact that the rosin precipitated in this way has a more colloidal character, than that thrown out of solution by other coagulants, and consequently will have greater covering power and efficiency as a water repellent. This explanation is opposed to the theory that rosin acids in the form of emulsion or suspensions are efficient sizing agents, for it is obvious that visible floating rosin has lost its colloidal character and its covering power.

The fact is that the so called free rosin emulsions, when properly made, contain but a very small amount of rosin acid in the emulsified form, practically all of it remaining in solution in the dilute soap. The art of preparing good rosin size emulsions (using the term as generally understood) is therefore the ability to dilute a solution of rosin acids, without the actual liberation of rosin in the emulsified form. The difficulty in doing this will explain the erratic results obtained by Remington and other investigators when endeavoring to determine the effect of rosin size containing dissolved rosin.

The laboratory difficulties involved are shown by an article by Otto Kress and R. T. Struthers, published in Paper, April 1913. Their results show that from a rosin saponified with 15% of sodium carbonate, over

98% was obtained by them in hot dilute aqueous solution, and that from a rosin saponified with 10% of sodium carbonate, only 50.6% was brought into actual solution in hot water. It is quite possible however, to dilute such a rosin soap holding in solution about 45% of rosin acids, to an aqueous solution of 2% solids, without having any of the rosin become insoluble. In this condition all of the rosin acids can enter into chemical reactions with other solutions and will precipitate from solution in a very bulky colloidal mass.

Between the extremes of physical condition just described, there are a great number of intermediate stages. The rosin acids may be partly liberated by dilution in the form of small visible floating particles and coarse granular masses and a part may be in a state of colloidal solution. It is safe to say that all rosin particles which are sufficiently coarse to be classed as suspensions, have lost the greater part of their sizing value. That portion of the rosin acids which is in colloidal solution is still effective for sizing purposes because it has the property of becoming fixed upon the fibres by absorption. This action can only take place, however, when the paper stock is free from such electrolytes as may discharge the colloid before it reaches the fibre. Dilute acid resinate solutions may contain variable proportions of dissolved acid resinates, colloidal rosin, and rosin suspensions, and the relative proportion of these is what determines the basis of its waterproofing possibilities. Assuming that the sizing value of these solutions varies directly with the amount of rosin acids that are in true and colloidal solution, we have a measure of efficiency which checks very closely with actual mill results.

The maximum amount of rosin acids that can be held in stable solution in a diluted rosin soap of from 1% to 2%, total solids, is about 50% of the total rosin content. In such a solution there is always a slight tendency towards hydrolysis which increases with the amount of dilution, but the fact that these solutions when once prepared can be then boiled without decomposition, shows that the solutions are fairly well stabilized and also that there can be very little rosin then present in the colloidal form.

The conclusions which it is desired to submit as offering a satisfactory explanation of practically all the phenomena in connection with sizing paper with rosin is as follows:—

- (1). That the rosin acids which are precipitated from dilute solution by means of a coagulant which will deposit the rosin in a colloidal mass, is the material which when properly incorporated into the paper stock and dried therein, produces the water resistant characteristic known as sizing.

- (2). That the results obtained from a given quantity of material are largely dependent upon the character of the rosin colloid and its treatment during the process of manufacturing the paper.

- (3). This product can be obtained in limited quantity from a neutral resinate, by the use of large excess of alum, or it may be obtained in large proportions from an acid resinate and a relatively less excess of alum. The maximum obtained from a neutral resinate being about 40% of the total rosin, and from an acid resinate about 70% of the total rosin, when a sulphate of alumina containing no free acid is used.

American Newspaper Publishers' Association

Committee on Paper.

Mr. A. G. McIntyre, of Toronto, has been appointed Manager of the Committee on Paper of the American Newspaper Publishers' Association.

His varied experience in paper and associated lines well qualifies him to handle the paper situation at the present critical time.

Mr. McIntyre has been both Engineer and Manager of some of the most successful paper companies in Canada, during which time he has designed and built a number of mills, together with having managed and operated same as well.



A. G. MCINTYRE.

He has been associated with the following companies:

Jonquiere Pulp Company.

Price Bros. & Company, Limited.

Bathurst Lumber Company, Limited.

Mattagami Pulp and Paper Company, Limited.

He also became Editor of the Pulp and Paper Magazine, when this magazine was purchased by the present owners, the Industrial & Educational Press, and acted in this capacity for a year after its re-organization.

He was also Superintendent and Organizer of the Forests Products Laboratories of Canada, under the Dominion Government, located in Montreal, where a large technical staff are engaged in working on paper making problems.

Mr. McIntyre was also Organizer and first Secretary-Treasurer of the Canadian Pulp and Paper Association, and leaves the position of General Manager of the Mattagami Pulp and Paper Company, Limited, Toronto, to take up this work.

His experience has been a unique combination of paper mill engineering, paper mill executive, publishing, Government expert work and association work.

The office of the Committee on Paper will be located in the World Building, New York City.

Mr. McIntyre has made the following statement, in connection with taking up this work:

"I have accepted this work of the Paper Committee, with the idea that something can be done to alleviate the present serious condition for the consumers of newsprint paper.

"Everyone knows there is a serious shortage in production over the demand; at the same time, much can be done by both manufacturers and consumers to adjust their business to the present conditions.

"Consumers must practise rigid economies, making all papers non-returnable; eliminating press room wastes and all avoidable consumption of paper. If this does not bring the consumption within the production, sufficient new mills must be constructed to take care of the normal consumption with the normal increase, as there is only very little new tonnage proposed, which will come on the market by 1918.

"Manufacturers must turn aside from export business, taking care of old and permanent customers; should run mills at the fullest possible capacity, and at a reasonable margin of profit.

"It has been distinctly understood with me before taking up this work, that the basis of relief will be mutual understanding and information between manufacturer and consumer, with sufficient increased tonnage provided, either by the present manufacturers, or by a few of the consumers, to protect the members of the American Newspaper Publishers' Association in their supply of print paper."

MARKET VALUES OF PAPER STOCKS.

The present unprecedented situation in the paper industry has fomented considerable speculative enthusiasm in Canadian paper and pulp stocks. Trading in these issues on the Montreal and Toronto stock exchanges has increased very materially, and prices are way up from the low of the year. Canada produces half as much newsprint as the United States, and she is increasing her capacity at a much faster rate than American mills.

The following table shows the extent of the advance this year in a number of prominent pulp and paper stocks listed on the Montreal and Toronto exchanges:

	Present price	Low 1916	Advance
Laurentide Paper	198	176	22
Wayagamack	74	27	47
Riordon Pulp & Paper	99	58	41
Price Brothers	95	60	35
Spanish River com.	15½	3½	12
Spanish pfd.	44	29	15
Toronto Paper	55	42	13

The Conservation Commission calls the attention of Canada to experiments showing that jack pine is well suited for making kraft paper. It will grow on poor land and is largely used in the West for fuel.

Why Paper is Dearer

In a letter to the members of the News-Print Manufacturers Association Mr. G. F. Steele ably refutes the charge that the recent advance in the price of paper were arbitrary measures.

The writer was unavoidably absent from New York when the monthly report of production and shipments for the month of August was sent out from this office on September 19th.

You have doubtless observed that the decreased production in August as compared with the month of July. This was largely caused by the difficulties encountered by one of the large Canadian mills by a terrible forest fire, which decreased operations for several weeks. It will doubtless occur, however, to every one of our members that due to the terrific pressure which has been placed on the operation of the mills during the past eight months, that it is a great wonder that production keeps up to the present high point. Machines are running at a much greater speed than they were ever expected to run, and ordinary shut downs for repairs and replacements have not been made this summer. It is usually the custom for most news-print mills to shut down at the end of the summer before freezing weather occurs, to run their screening and tailings into wrappers. I do not know of a single mill which has indulged in this desirable practice this year, and in order to get a supply of wrappers for the coming six months it may be necessary for some mills to stop making news-print paper temporarily and run out their wrapper stock.

During the months of June, July and August in normal years production drops down materially, and stocks are accumulated for the great Fall demand. During the months of June, July and August of this year, instead of accumulating increased stocks, you doubtless have observed from the statement submitted to you that total stocks at hand at all points, including stocks on hand at mills, in transit, and at destination points, decreased 7,316 tons or 10.6 per cent. It was thought by those who are best posted in the industry that stocks were at danger point on June 1st, and that unless these stocks could be replenished there would be grave danger of the necessity of some papers suspending publication temporarily because of the inability of the mills to get paper to them in time for their requirements during the coming Fall and Winter. During the three months of June 1st to September 1st, 1915, storage stocks increased as much as they have declined this year.

During the past few weeks the newspapers have been full of violent outcries, uttered by publishers, regarding the high price of news-print paper. There have come to my desk during a period of two weeks over 1,500 radical and abusive articles, making all sorts of baseless and unfounded charges against the manufacture of news-print paper. It is quite evident that these newspaper publishers are more scared than hurt up to this time, for owing to the peculiar nature of this business and the fact that the great bulk of the business is contracted for the calendar year in the fall months of the preceding year, it is the belief of those who are best posted in the industry that on the average the price of roll news-print paper which is sold on contract has not advanced up to this time more than 5% or \$2.00 per ton. Many newspapers have taken advantage of the situation to raise subscription prices

and to raise their advertising rates, when these same papers are paying no higher price for their supply of news-print paper than they were paying a year ago.

So much has been said about the price of news-print paper, and so little has been said about the rise in price of other commodities, that I have endeavored to make up a list gleaned from responsible commercial publications regarding the rise in other commodities.

Just as soon as the price of news-print paper advances, no matter how little, the newspaper publishers promptly outdo the Prophet Jeremiah with their lamentations and demand an immediate investigation on the part of the government. We do not see the same demand when the prices of other commodities advance.

The selling price of the raw materials entering into the manufacture of news-print paper has increased to a very remarkable extent during the past year. Many mills now making news-print paper are paying a very much enhanced price for the cost of raw materials which they have to purchase. Other mills purchasing the chemical and ground wood pulps entering into the manufacture of their products are operating on old contracts which expire with the calendar year. There is every indication at the present time that the price of these two commodities after January 1st, 1917 will be practically double the price which ruled a year ago, and perhaps in the case of chemical pulp three or four times the price which ruled a year ago. The mills which are forced to make news-print paper from these high priced raw materials will necessarily have to charge what would seem like an inordinate price to operate at a profit.

Consider, for example, a paper mill which is dependent on the market for its supply of raw material. Sulphite pulp, of which news-print paper contains approximately 25%, is now selling around \$100.00 at the sulphite mills and the mill which converts it into news-print paper will pay \$25.00 per ton of paper for this item. Ground wood, which constitutes 75% of news-print paper, is selling at \$30.00 per ton F. O. B. ground wood mill, and the converting mill pays \$22.50 per ton of paper for this. As it takes approximately 110 pounds of pulp to make 100 pounds of paper, this brings the total cost per ton to \$52.25 for the raw materials alone. Add to this a freight rate of 12c per hundred pounds for pulp, 40% dry, and the cost per ton of raw material comes to \$58.85. Add to this the manufacturing costs which, according to the Tariff Board figures in 1911 amounted to \$10.14 in the United States, and a larger figure in Canada. These costs have easily increased 50% since 1911, which makes a total cost of the paper \$74.06 per ton.

The majority of paper mills make one or both grades of pulp, in which case increased expenditure is dependent on the increased cost of pulpwood, coal, labor, machine clothing, repair materials, chemicals, etc., but the mills dependent on the market for raw materials have to obtain large prices to operate at a profit.

In the year 1914, the average price of news-print paper was approximately \$2.00 per hundred pounds F. O. B. cars at mill. The largest producer of news-print paper in the world, is now charging for renewal of contracts \$3.00 per hundred pounds F. O. B. mill, or an increase of 50%. Compare this increase with the increases in the following commodities, taken from such authorities as:

R. G. Dun & Co. — "WEEKLY REVIEW".
"THE ANNALIST".

BRADSTREET'S.

U. S. Market Statistics (As quoted by the "N. Y. SUN".)

Monthly Summary of U. S. Commerce.

Then follows a long list of articles in daily use which have advanced from 25 to 467 percent showing that the advance in the cost of paper is not an isolated case. The cost of living index accordingly to the New York Annalist increased from September 1915 to September 1916 from 135 to 185, an increase of over 37 per cent, and the market value of securities listed on the New York Stock Exchange increased from July 30th, 1914 to September 1916, deducting value of new editions, by over \$3,000,000,000.00, a net increase of 33 per cent.

According to Bradstreet's, out of 106 commodities which their index table embraces, all but 17 advanced in price between September 1st, 1915 and September 1st 1916, representing for the entire groups an average increase of over 16½%. According to Dun's last review, out of 328 commodities quoted, 42 showed advances in price over the previous week, while but 25 showed decreases.

There is another matter to be considered. During 1915 there was a decided increase in the price of practically every commodity, except paper. The Journal of Commerce quotes from the United States figures as follows:

"Wholesale prices of commodities in the United States averaged considerably higher in 1915 than in the preceding year, according to Bulletin 200 of the Bureau of Labor Statistics of the United States Department of Labor. ***The Bureau's weighted index number for December (1915) stood at 105, the highest point reached in any year since the collection of data for the present series of reports on Wholesale Prices, dating back to 1890, was begun.

"Violent fluctuations were recorded during 1915 in the prices of all commodities, particularly drugs and chemicals and metal products. ***In the fuel and lighting group*** in August the prices again advanced (After a Spring slump) the increase continuing for the rest of the year. ***Articles belonging to the food group were in the aggregate highest in price in December and lowest in September. The increase between January and December in this group was nearly 4%." The paper market, however, remained unchanged.

In other words, the price of other commodities advanced rapidly during the year 1915, while the price of news-print paper was stationary, and at the present time the advanced selling price of news-print paper does not compare unfavorably with the high cost of living as evidenced by practically all other staple commodities.

COMING TO CANADA.

The Bryant Paper Company, of Kalamazoo, is planning the construction of a pulp mill in Canada, involving the expenditure of approximately \$1,500,000. The company is now one of the largest book paper manufacturers in the United States its daily output being 200 tons. It operates ten machines at present, but has prepared plans and specifications for the addition of two more machines, each 154 inches in width,

Suggestions as to Purchase of Pulp Wood

Messrs. C. P. Winslow and R. Thelan of Madison Wis. gave a very interesting paper on the consumption of Pulpwood and the best method of purchasing it. A summary follows:—

The annual consumption of pulpwood in the United States amounts to approximately 4,300,000 cords, representing an expenditure in the neighborhood of \$36,000,000 per year by approximately 250 companies. From these figures it is apparent that the question of proper pulpwood specifications is of wide importance.

While the value of pulpwood is dependent basically upon the tons of dry pulp that can be produced from a given number of dry tons of wood, the great quantity of the wood is bought and sold either on the basis of an estimated and variable volume of wood in an assumed space, or on the theoretical quantity or volume of lumber which can be cut. Thus, with dry weight as the real and final measure, we find substituted for it a variable and indefinite volume, and the result in the long run is fair to neither seller nor purchaser.

While by far the greater proportion of pulpwood is purchased as cordwood or by log scale, it must not be overlooked that the use of sawmill waste is steadily increasing, and amounts to approximately 7.7 per cent. of the total. It is manifestly impossible to apply the log scale to the measurement of such material.

While it is entirely evident that a completely satisfactory basis of specification cannot be secured with a unit of measure based on volume, it is equally apparent that such unit of measure must continue to be used very largely for this purpose. It is desirable, therefore, where perfection cannot be had, to compromise on the issue, and some suggestions along this line are as follows:

1. An enumeration of the basic and fundamental principles which must underlie any correct system of specification should show clearly the relation of yield of pulp to the dry weight of specific gravity of the wood and the relation and probable variation of this dry weight in a given volume.

2. For the conditions where the cord will continue to be used as the unit of measure, the formulation of definite specifications to the end that this unit of measure may come to represent an approximately fixed volume of solid wood.

3. A study of the relation of actual cubic contents of logs of varying sizes to the board foot measure, as determined by the various log scales used in the purchase of pulpwood.

4. A study into all phases of the question of supplying pulpwood in the form of baled chips as the source of supply. Such a study should cover such points as the quantity of chips secured from a ton or a stacked cord of various forms of mill waste and from a standard cord, the cost and best methods of chipping, drying and baling, and finally of methods for determining the moisture content of the baled chip, which would presumably be sold on a weight basis.

5. Attention to methods for limiting, describing and illustrating such points as "knotty," "rough," "doty," "fire scarred," "heart-rot," "sap-rot," etc. All of these defects detract from the value of the material, but to just what extent is not at present generally established.

6. Other points, such as standard methods of determining the dry weight and moisture content of the wood, or of measurement of wood fiber dimensions, also require attention.

Guesses About Pulpwood Supply of Future

One of the most interesting papers read at the convention dealt with the Pulpwood Supply of the Future. It was by Prof. P. S. Lovejoy of the University of Michigan.

Mr. Lovejoy pointed out that the amount of cotton or corn raised in the country each year, the regions of production and the approximate costs and the sale values were known, and that with about the same relative degree of accuracy the principal items of timber production were known. In the case of pulpwood, statistics compiled from reports of the mills showed the consumption by species, by States, the amounts and kinds imported and how these items compare with past performances.

Attention is now being devoted, Mr. Lovejoy said, to learning where our remaining forests are and what is in them, but the results are far from satisfactory as compared with the record of manufacturing. He asserted that we did not know now, within 25 per cent, what our stand of saw timber is for the whole community or for a given region or State. Practically nothing is known about the existing pulpwood supply, so that guesses as to the future cannot be accurate, but Mr. Lovejoy explained that there were many things upon which such guesses could be based.

Competition Between Saw Mill and Pulp Mill.

A condition that would have to be met was greater competition between pulp mill and sawmill, Mr. Lovejoy said, as the value of lumber was constantly increasing while the merchantable grades of lumber were declining. The pulp mill is at a disadvantage in this respect; that it represents a greater capital than the sawmill and cannot be moved to a new location.

On the other hand, Mr. Lovejoy continued, the pulp mill owner is able to use a poorer grade of material than the sawmill, and every time a new way of using still poorer material is found he increases his supply of raw material and extends his period of operation at one place. Another way in which to increase his available raw material is to see that the forests which are tributary to his plant are not burned out. Forest fires cannot be insured against and always result in the end in considerable loss to the industry. A really efficient organization for the prevention of fire can usually be maintained at from 2 to 10 cents per acre each year, Mr. Lovejoy stated, and it is cheaper and more effective to protect large areas over a long period than otherwise.

Wood End of Pulp Production Wasteful.

Mr. Lovejoy pointed out that in many cases the woods end of pulp production was very wasteful. As an example, he cited a given forest area, having a stand of one-third beech, birch and maple, one-third spruce and one-third hemlock and balsam. Only a small part of the stand offers good log timber, not sufficient to attract a sawmill. A contractor is obtained to get out the pulp stock, the mill specifying that the stock shall not exceed 5 per cent. species other than spruce. The

spruce comes out, together with all the balsam that the contractor can get by with. That skins the stand, but is not the worst of it. A lot of slash is left on the ground offering good material for a fire. If fire does not come the wind throws a lot of balsam. Side-light hitting the hemlock parch-blights it and it dies. Conditions are favorable to tree-destroying insects. If the forest finally survives it will not longer be a pulp-producing forest.

As a remedy for this condition, Mr. Lovejoy urged a dependable inventory of the forest resources by combined Federal, State and private agencies and the development of greater co-operation between wood-using plants, so that everything the forest produced could be utilized. He suggested that private owners might be induced to go into the business of raising timber, rather than have all the forests owned directly by the mills.

Conservation of Raw Materials Essential

The conservation of raw materials was essential to a well-organized industry, and there was danger that the pulpwood supply might not be protected. Growth of timber was slow, a cord an acre being the approximate annual rate for well worked forests. The annual consumption is about 5,000,000 cords of pulpwood in this country; a tree of 50 years of age is the best for the purpose. Working on this basis, it would clean-cut from 150,000 to 200,000 acres each year to meet the demand. Under the present system of unscientific cutting, the number of acres cut over each year reaches several million.

5,000,000 Acres of Timber Land Needed.

Putting it another way, Mr. Lovejoy asserted that 5,000,000 acres of timber land were needed to establish the industry on such a basis, provided that only 100,000 acres were cut over each year. Compared with the 500,000,000 acres needed for all timber requirements of the United States, this is a small amount, he explained, and it is up to the pulpwood men to see that it does not get lost in the shuffle.

Fire and heavy taxes prevent the growing of timber from being an attractive investment proposition to the individual, but for a corporation it is different, said Mr. Lovejoy. Under proper management the forest land will begin to render return at once. Several pulpwood mills are already on this basis.

In closing, Mr. Lovejoy urged the importance of less severe competition and greater co-operation. Such changes were radical, but they must be undertaken to preserve the industry.

TRADE ENQUIRIES.

A firm at Bristol, Eng., has saked the Canadian Trade and Commerce Department for quotations for a contract on woodpulp board. They desire the board to be 40 inches by 45 at about 180 sheets to the British cwt., and ask for 100 to 150 tons a year, delivered ten tons per month.

A Glasgow, Scot., firm states that a large demand exists there for straw-boards, leather-boards and pulpwood-board. They have forwarded samples to the Department of Trade and Commerce at Ottawa for quotations.

Two Russian firms have asked the Dominion Trade and Commerce Department for quotations for writing papers for commercial purposes. They prefer white and light blue colors. Quotations for quantities e.i.f. Vladivostok, desired. They sent samples with their request.

Sweden's Production and Export of Paper

Translated from "Papir Journalen" Christiania, Norway by the News-print Manufacturers' Association.

In the report of the Swedish Chamber of Commerce is said as a general opinion about the Swedish paper industry in 1915, that it has had to pass through many troubles, and that operation has been difficult and expensive.

Of raw materials, pulpwood prices increased very early on account of forced pitprops export, and because pitprops used much timber previously chiefly had been used for wood pulp and cellulose, that is pine and spruce of large dimensions. To a larger extent there were made purchases of pulpwood in Sweden for export to Norway, which, on which account of the war, could not supply its demand by imports from Russia. On account of the purchases for foreign consumers, the supply in some places was so scant that several wood-pulp and paper mills had difficulties in covering their requirements. These conditions caused a great rise in prices. After repeated petitions from the Swedish Paper Mills Association on November 6th, 1915, an embargo was declared on the export of unrefined spruce and pine. In spite of this, felling and purchases for foreign consumers have been continued, in the hope that licenses would be given liberally and likewise with the thought that after the coming peace, it would be possible to ship great quantities of pulpwood from Sweden to countries, where it then would be in great demand. In some parts of the country these conditions have brought about an enormous wood felling which for a long time to come will decrease the supply of pulpwood.

A number of requisites to the woodpulp and paper industry, which must be imported have not only increased in prices enormously, but it has been attended by many difficulties in obtaining the most necessary supply.

The rise in prices of some raw materials and requirements have at the end of the year been estimated at the following figures:

	Per Cent.
Pulpwood has gone up	30-60
Dyestuffs	400
Chloride of lime.....	1000
Coal	400-500
China clay	100-200
Resin and other chemicals	300
Sulphur	160-200
Felts, wires, reserve parts, oils and everything else necessary to the unhampered operation of the machines.....	100-500
New machines to replace worn out ones, electric appliances, etc.....	65-500

But in other respects too, the production has become more expensive, for instance increased wages to employees and laborers on account of the famine, greatly increased freights for imports and exports, considerably raised railway tariffs, etc.

All these items of increased cost in production and operation, have, of course, brought about an increase in the prices of paper, so far as this has been possible. Some buyers in foreign countries have consented to an increase of price for deliveries on older contracts. The sellers in Sweden, by the bye have arranged to sell f.o.b. Swedish ports, and have avoided thereby the risk of

increase in freight and insurance. In the first half of last year, the prices could be raised on a few qualities. But only in the latter half of the year came a systematic co-operation among the Swedish producers for a regulation of prices, and this price regulating was done in concurrence with the Norwegian paper producers.

The foreign demand for paper has increased latterly, and now very high prices are offered for some qualities. The demand for paper suitable for the producing of yarn especially has been very great and of these kinds of paper Sweden has sold quite a good deal. There has been a demand for paper yarns and textiles made therefrom; but the production thereof is very limited in Sweden. The production and the exports of some other paper goods has increased during 1915. But the increase has not always, to cite the report mentioned, been as great as might have been desired in order to get a firm hold on the world markets for the Swedish paper industry, for which the present time is most favorable.

THE GOVERNMENTS PAPER BILL.

The high cost of paper is hampering the work of the United States government seriously. Publications are being cut down and plans are under way to discontinue those of minor importance. Officials in all departments put into effect today orders to conserve paper. A principal step is use of smaller type in printing.

The United States government annually places the largest individual contract made in this country for paper. When paper required for present fiscal year is ready for delivery, general purchasing agents have been warned that mills will not be able to meet a demand equally as great next year, even at enormous increase in price.

Dr. O. H. Briggs, head of government general supply division, says: "Latest reports show a crisis in the paper industry, and retrenchment all along the line will be enforced. Government contract price for fine grades of typewriting paper last year was 12 cents a pound. Today we should have to pay 20 cents. We are using 100 different kinds of paper. Since the war the price has jumped about 100% and will continue to soar."

Government printing demands about 15 carloads daily and paper for its use alone has amounted to more than \$1,000,000 a year. Printing paper for this year's work costs 4½ cents, but contracts for future supplies will show 100% increase or more in price.

CHANGES AT FOREST PRODUCTS LABORATORY

Dr. J. S. Bates, Superintendent of the Forest Products Laboratories, has left for Shawinigan Falls to assist the Imperial Government in the production of chemical products needed in munitions manufacture. Dr. Bates is "loaned" to the Imperial Government by the Dominion Government for the period of the war.

W. Boyd Campbell B.Sc., Assistant Superintendent, who has been to the front for the past twelve months, has returned to take up the duties of Dr. Bates until his return.

There arrived 10,368,000,000 matches in New York a few days ago from Sweden on SS. Stockholm to relieve shortage in United States. Steamer also brought 7,500 bales of wood pulp.

INSURANCE OF STANDING TIMBER REGARDED AS FEASIBLE.

Standing timber is one fire risk that hitherto has not been regarded with favor by the fire insurance companies. Some insurance of this sort has been written in Canada by the London Lloyds on separate limited tracts and an excess loss only, the insured bearing all losses below this limit. The Phoenix Insurance Co., of London, is, however, this year writing some insurance upon green standing timber in Oregon and Washington, with certain restrictions, and at rates varying from 1 and 1½ percent. The timber must be accessible to markets, not unduly exposed to fire hazard, and only one risk is taken in each fire zone or area indicated by the Company. No risk is written greater than \$17,500 in any one such area.

W. R. Brown in an article on this subject in "American Forestry" goes in to some detail in discussing the possibilities of this subject. He summarizes the fire experiences within the territory of various fire prevention associations, and his figures include the 22,000,000 acres under the supervision of E. C. Allen in the twelve western private fire prevention associations which he supervises; the New Hampshire Timberland Owners' Association with 1,000,000 acres; the Northern Fire Protective Association of Michigan with 2,000,000 acres; the St. Maurice Valley Fire Protective Association of Quebec with an area of 8,000,000 acres — the total of the four associations being 33,000,000 acres. The expenditure for forest ranging and fire prevention is approximately 1 cent an acre for the first three and ¼ cent an acre for the Canadian organization. In the western associations the fire loss for the year 1910 was one-half of 1 percent. In each association since that time it has been much less than that figure, except for 1914 in the Canadian association, when one fire got away and the fire loss of the year was three-fourths of 1 percent upon the timber valuation. Taking all four areas together and summarizing the figures for each which Mr. Allen gives, the average yearly losses respectively were as follows:

1910, .005; 1911, .000171; 1912, .0002328; 1913, .0012636; 1914, .00253; 1915, .00427.

The writer concludes from these figures that in such protective areas fire insurance should cost for the loss ratio not over one-half percent annually, with another one-half percent added for administration cost of the insurance plan. He gives some further experience upon which to base this conclusion. In Minnesota during the last ten years, with its forest wealth of \$280,000,000, the average fire loss has been about \$100,000 or one-thirty-fourth of 1 per cent annually.—American Lumberman.

PAPER CLOTHES.

A new German textile in which paper is spun with about 20 percent of cotton is being exhibited in Copenhagen.

Unspun cotton in the form of down is glued to one side of endless rolls of paper and the paper is then shorn into narrow bands, which are spun with the cotton side outwards.

Danish experts were shown "paper" underclothing jerseys, sheets, bandages, and horse blankets, but the cost of production of the cloth is said to be too high to allow its competing with cotton and woolen cloth under normal conditions.

MUNICIPAL FORESTRY.

Forestry can never appeal to individual enterprise on a large scale. Returns are too slow. As a national enterprise of the highest importance it is gaining recognition, and there is a tendency among some American cities to take advantage of its many possibilities. With the exception of the vicinity of the Great Lakes, the world's largest reservoir of pure fresh water, cities must have water supplies from available drainage or watershed areas. These can be devoted to forestry with advantage from a sanitary point of view, and also with profit when the trees begin to mature. Where convenient, the forested area can also be made to serve as public parks. The city of Fall River, Mass., began in 1909 to plant trees in Watuppa Pond Reservation. There are 3,232 acres of land belonging to the municipality in a natural forest condition and 1,552 acres suitable for reforestation. The trees are supplied by the State Forestry Bureau. The Metropolitan Water Board, which represents Boston and other cities in this matter, has planted, chiefly in the Wachusett Reservation, about 1,800 acres with forest trees. In six years the State forestry service has furnished to the cities of the State a sufficient number of trees to cover 1,481 acres, and it is estimated that 15,000 acres in city reservoir tracts have been put under some kind of forest treatment. Massachusetts has gone beyond the use of the watershed reservations for this purpose. An act was passed by the Legislature three years ago permitting cities to buy land to be kept distinctly as forests, quite aside from water purposes. There are now several of these city forests in existence.

Elsewhere in the United States the same tendency exists. In ten large and middling-sized cities forest domains aggregating over 150,000 acres are maintained, and it is probable that municipal forests comprise 250,000 acres. Newark, N.J., has a forest of 22,000 acres, and in time the whole of it may be scientifically forested. Hartford, Conn., has a forest property of 4,000 acres, which is being developed for timber production. Here are examples for Canadian cities. Winnipeg's water development may be made to serve a double purpose. Even Toronto's suburban ravines, though unsuited and unnecessary for water supply, might serve the dual purpose of timber production and park systems. Municipal trading has many critics, often unreasonable, but municipal reforestation should be made a possibility where Provincial authority is neglecting its duty in that regard and falling behind in the march of progress.—Toronto Globe.

PUBLISHERS TO MAKE PAPER.

Fifty newspaper publishers of Florida are considering establishment of a plant to manufacture paper from pulp of fibrous trees and bushes in that state, particularly palmetto. Investigations have shown fibrous material is of better quality than spruce pulp which is used in manufacture of newsprint.

In connection with the advance in paper issues, timber limits, which normally have a value of about \$1,000 a square mile, have risen to \$2,000 a square mile.

A prominent dealer who returned a few days ago from the Quebec woodlands reports that the supply of pulpwood this year is but 50 percent of what it was year ago because of the inability to get labor.

SCARCITY OF PAPER IN FOREIGN COUNTRIES.

The following information furnished by United States consuls and published in the United States Commerce Reports, will be of interest to the Canadian paper trade:—

Government May Take Action to Relieve Brazilian Situation.

The scarcity of paper, and particularly of news-print paper, in Rio de Janeiro is still a serious matter. While stocks have been replenished, there are signs that another crisis is approaching. The "Jornal do Commercio", the leading daily paper of the city, in an editorial on July 7, seriously proposed that unless the Brazilian Congress saw fit to reduce the import duties on news-print paper for a time, all the newspapers of the country should begin to eliminate news that was superfluous and print smaller daily editions so as to save paper.

The matter has attracted widespread attention, perhaps on account of the impressions that importers usually profit by a scarcity on the local market to make exorbitant demands for what stocks they may have on hand. Although the serious situation now confronting the country has been looming up threateningly for a long time past, no effort seems to have been made to save paper or to collect waste paper and rags.

Senhor Dunshee de Abranches, of the Brazilian Chamber of Deputies, himself a man familiar with journalism and the needs of the paper trade, has already presented to Congress a proposed amendment to the forthcoming budget law, providing that imported paper shall pay no duty and only the expediente tax on entering the country.

Spanish Government Asked To Seek Remedy.

The scarcity of paper in Spain has caused some anxiety, and representatives of Spanish publishers, printers, and manufacturers of paper and cardboard have informed the Government of their willingness to postpone filling export orders until after the domestic demand for their products has been fully met. They also expressed a desire that the Government fix prices and conditions to control the export of raw materials used in paper manufacture. Accordingly, a royal order, published June 15, 1916, appointed a commission, a representative of the Government presiding, formed of three delegates chosen from each interested group, namely, paper manufacturers, newspaper publishers, and those engaged in bookmaking arts.

This commission is to pass on all complaints formulated, proposing, if necessary, such methods as it judges opportune with respect to the export of paper and unmanufactured cardboard. The custom house authorities must submit to this commission a sample of every class of paper or cardboard exported, its origin, and the name of the exporter.

The paper-making interests in Spain employs chiefly wood-pulp, and its price has increased about 85 per cent since the war began. Imports of wood-pulp in 1913 amounted to 61,000 metric tons of 2,204.6 pounds each; in 1914 to 40,000 tons, and in 1915 to 50,000 tons. More than half of this supply comes from Sweden; other sources are Germany and Norway.

Wood-pulp and logs for making pulp coming from foreign countries were exempted from the transport tax in March last, and an export duty of 18 pesetas gold per 100 kilograms (\$1.58 per 100 pounds) levied on endless paper weighing from 41 to 50 grams per square metre and containing mechanical pulp.

SUPPLY AND DEMAND LAW CONTROLS PAPER PRICES.

In his address before the New York Business Publishers' Association, formerly the New York Trade Press Association, at the Advertising Club of New York on Oct. 2, Judge C. F. Moore, secretary of the Bureau of Statistics of the Book Paper Manufacturers' Association, declared that there was a real paper famine in the United States, and that the law of supply and demand was solely responsible for the present high prices of book paper.

He went on to say that the people in the United States were enormously busy and that they were using more paper than ever before; that there was a more acute paper famine abroad than in America, that the mills in the United States were all working day and night six days a week, and that because of discouraging legislation passed by Congress in the past the paper manufacturers had not been keen on building new plants and installing new machinery when there was such a chance for keen competition from abroad. He asserted that there had been no agreement by paper makers to boost the price or to regulate it.

LOCKWOOD'S DIRECTORY.

Lockwood's Directory of the Paper & Stationery Allied Trades for 1917, has just been received by the Pulp and Paper Magazines. The work has come to be regarded as a standard publication, and is eagerly looked for by those engaged in the pulp and paper industry.

The Directory this year contains 768 pages as compared with 742 pages for the previous year. It contains a vast amount of information relating to paper dealers, rag and paper stock dealers, paper box manufacturers, twine manufacturers, wall paper makers, envelope manufacturers, paper bag producers, trade associations, the stationary trade, water marks and brands, etc.

The Trade Statistics contained in the Paper are brought right up to date, which in view of the changed conditions brought about by the European war, make it of particular value. The price to anyone engaged in the trade is \$3.00. It is published by the Lockwood Journal Company, 10 East 39th St., New York.

THE WOOD DISTILLATION INDUSTRY.

It is estimated by the New York State College of Forestry that 640 cords of beech, birch and maple wood are used every day in the wood distillation industry in New York State. The industry has been greatly stimulated by the European war inasmuch as acetate of lime, of one the principal products of the industry, is used in the manufacture of high explosives.

THREE IDLE MILLS.

At the present time there are but three idle pulp and paper mills in Canada, two of which are located in British Columbia, and the third in Nova Scotia. These are all small mills, and in contrast to that, it is only necessary to point out that all the other mills in Canada are working to capacity.

The annual consumption of paper pulp wood in the United States is 4,300,000 cords, representing an expenditure of \$36,000,000 by approximately 250 companies.

SHOES LIKE "THE WONDERFUL ONE HORSE SHAY."

When a man is "on his uppers" he is in a very serious condition for then his shoe soles have worn out and he has no money to buy more. This expression therefore carries with it the assumption that the uppers of our shoes wear better than the soles. It is a slang phrase of recent introduction; for can we not recall our boyhood days, and see those gorgeous patches on our Sunday best wax calf shoes, or our every day high boots—patches which were striking emblems of the cobbler's art? Yes, the soles outwore the uppers then, but they had other less desirable qualities than durability. Hark back, and you can hear again that vibrant reverberation echoing upon the stillness of the Sabbath morn as the deacon, contribution box in hand, tip-toed up and down the aisle; every squeak of those blessed boots sounding like the droaning of a rusty saw in a hemlock log.

Times have changed, however, since those happy days. The Chemist has been busy, and his achievements in the leather industry have been revolutionary. In 1884, Augustus Schultz of New York City, who was not a tanner but a chemist, patented a process for tanning with chromium salts. As a result of this discovery, over ninety per cent of the shoes worn throughout the world to-day are made with chrome-tanned upper leather. This chrome-tanned leather, which, we are proud to say was made commercially possible in America, is cheaper, more durable, easier to manufacture, holds its shape better, and, in every other respect, is superior to bark-tanned leather of former years. This is the reason why we do not wear patches on our shoe uppers to-day.

The sole leather of to-day, it is claimed, does not wear so well as that of former years. Possibly this may be the case, but still the statement is open to a question. Granted, however, that the sole leather of fifty years ago did wear somewhat longer, there are reasons why we should not care to return to its use. In place of the old style leather, which was a hard and as hard and as slippery as steel, we now have a leather which cuts well, looks well, and, above all else, feels well on the foot. Therefore, looking to our comfort as we do, we would never be satisfied with the shoes that grandpa used to wear.

The meeting of the American Chemical Society, which was held in New York City during the week of September 25 to 30, and the Exposition of Chemical Industries meeting there at the same time, makes us wonder if the chemist will soon be able to make the sole of a shoe wear as long as the upper. Something along this line may be forthcoming, as it is pretty well known in the trade that a sole leather can be produced by means of a so-called chrome combination tannage which will outwear bark-tanned leather three to one. To prove this point, a recent series of tests were made on twenty mail carriers and twenty policemen in New York City. On the right shoe of each was a sole made from a chrome combination, and on the left was the best oak sole obtainable. On the average, two oak soles wore through and the men were on the third before the chrome combination saw its finish.

With the price of leather constantly going up and the supply of hides not sufficient to meet the demand, the time is soon coming when we shall be forced to produce sole leather possessing a greater degree of

wearing quality. We shall then have shoes on our feet which will be like the proverbial, "One Horse Shay"; for, when they do go, even the cobbler will not be able to find the pieces.

WORK OF THE BUREAU OF STANDARDS.

Reference is made in a recent issue of the "Scientific American" to the excellent work being done at the Bureau of Standards, Washington, D. C. In relation to the pulp and paper laboratory presided over by Frederick C. Clark, a prominent member of the Technical Association of the Pulp and Paper Industry, the "Scientific American" says:

"Some time ago, the Government, realizing that we were cut off from supplies of rags and waste paper, which heretofore had been imported in large quantities, appealed to the public to save such refuse material and sell it to paper manufacturers. As a result of this appeal, a manufacturer of waxed paper asked the Department of Commerce whether any use could be made of clippings of his product. In the production of waxed paper sheets, this company is burdened with large quantities of clippings, which have been hauled away by the earload and destroyed. Owing to the association of the paraffin wax with the fiber of the paper, such clippings cannot be introduced into ordinary paper pulp.

QUEBEC'S FOREST ECONOMY.

• (Telegraph, St. John, N.B.).

Quebec, some years ago, established a provincial nursery, and this year, in addition to the young trees planted on Crown lands, the provincial nursery shipped 400,000 seedlings to pulp and paper companies which are reforesting the lands they have cut over. The Laurentide company alone bought 250,000 of these young trees. A large number were sold to other pulp and paper companies, and to private individuals. The Perthuis seignory alone bought 50,000 seedlings this year; and this is the sixth year in succession during which trees have been bought from the province for use in this seignory. With this example just over our provincial line fence, New Brunswick continues a policy of waste and neglect.

PAPER SHORTAGE SERIOUS IN NEW ZEALAND.

New Zealand paper shortage is interfering greatly with printing business and the government is limiting publications turned out by it. Because of difficulty in getting paper, managers of a number of publications talk of suspending.

Supplies of certain lines of paper, cardboards, pasteboards, etc., are almost impossible to obtain, and it seems unlikely that this condition will improve much until some time after the war, unless American or Canadian manufacturers are able to relieve the situation. Scarcity of envelopes is very marked, and it is almost impossible to obtain certain lines. One firm in Auckland took orders for 25,000,000 envelopes, but has been able to get orders accepted in the United States for only 15,000,000, and to date only 5,000,000 have been delivered.

The output of pulp and paper from British Columbia last year was 50,307 tons of manufactured paper and 13,000 tons of sulphite pulp, valued at \$3,200,000.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

October 14, 1916.

Considerable interest was manifest in the New York paper circle during the past fortnight by the resignation from the International Paper Company of Arthur E. Wright. Mr. Wright has been connected with the International for many years. At one time he was Vice-President and Sales Manager, but several years ago he relinquished the former position to devote his entire time to the daily distribution of the company's 1,500 tons of paper. Mr. Wright has been appointed Secretary of the Perkins-Goodwin Company at 33 West 42nd Street, New York, and has already assumed his new duties.

* * *

Another addition to its mills is announced by the Union Bag & Paper Company. At the offices of the big concern in the Woolworth Building, New York, it was said last week it had been decided to build a plant at Hudson Falls, N. Y., for the manufacture of paper bags. The specifications call for a four story building, 100 by 400 feet. Work will be begun immediately and when completed it is expected to increase the company's pay roll by approximately 400 people.

* * *

Press dispatches from San Francisco, Cal., state that the Northwestern Compo Board Company, which, by the way, is a branch of the C. A. Smith Lumber Company, had negotiated with the Union Lumber Company to utilize its redwood refuse at Fort Bragg, Cal., for the manufacture of Compo board. It is also understood that work will be started immediately upon the erection of a suitable mill at that place.

* * *

Hans Lagerlof, President of the Scandinavian Trading Company, with offices in the Produce Exchange Building, New York, has just returned from a protracted trip through Scandinavia. Mr. Lagerlof left the States last July, and relates some very interesting experiences during his sojourn in the war zone.

* * *

After being idle for about six years, the old paper mills at Mount Holly Springs, Mass., will shortly resume operations. The Mount Holly Paper Mills, Inc., has been chartered in Massachusetts to take over the properties and good will of the old concern. The officers of the new corporation are: Frank Locke, President; H. T. Maynard, Vice-President and General Manager, and H. A. G. Locke, Treasurer. It is stated that the mills will be placed in operations as soon as repairs can be made and new necessary machinery installed.

* * *

The Northwestern Paper Company, of Minneapolis, Minn., has amended its charter increasing its capital from \$1,000,000 to \$1,500,000.

* * *

Quite a number of the leading paper jobbers exhibited at the third annual printing show at New York,

September 30th to October 7th, where they demonstrated their various grades of papers to the printers of the country. This exhibition has always interested the paper jobbers very much, and it was said that this year's show was attended by a greater number of people than ever before.

* * *

The correspondent on the Pacific Coast of one of the leading trade journals states in a current dispatch that the Hawley Pulp and Paper Company is building a new paper mill at Oregon City, Ore. Orders have been placed for the machinery and excavation for a concrete foundation has begun. It is expected that the mill will be ready for operation about Spring time.

* * *

It is understood on good authority that the Kalamazoo Paper Company, Kalamazoo, Mich., in order to have sufficient power to run its new coating plant, will increase its present power plant by the installation of a new 1,250 horsepower turbine engine. Other necessary additions will also be added which will make the company have one of the largest power plants in the state.

* * *

The Delaware charters during the past fortnight listed the Roberts Sulphite Company. Objects of the new corporation are to deal in wood pulp and paper stock. The capital stock is placed at \$2,500,000.

* * *

Another large pulp corporation to be reported during the past fortnight is the Filer Fibre Company. This is a \$300,000 concern. It proposes to engage in the manufacture of wood pulp at Manistee, Mich. It is understood that the concern, which is backed by E. G. Filer, will begin immediately the building of its mill, and be in operation sometime about the early spring.

* * *

Fifty newspaper publishers of the State of Florida, convened at Jacksonville on October 6th and 7th to discuss the high cost of printing paper and consider the advisability of establishing a plant in Florida to manufacture paper from pulp of fibrous trees and bushes, particularly the palmetto. Investigations, it is said, have shown that fibrous materials are of better quality than the spruce pulp which is used by the mills in the north. Several specimens were shown at the meeting and those from the Florida trees showed more tensile strength than any of the other grades submitted. It was said that the Florida editors will endorse and promote any move that will bring about the establishment of a mill in that state.

NEW YORK MARKETS.

New York, N.Y., October 7, 1916.

The outlook in ground wood pulp is very discouraging, so far as the consumer is concerned. There is now a definite certainty that the market must continue to grow more acute and that the value of pulp

will be on the ascendancy for some time. While there has been no material increase in the quotations reported for ground wood, since our last issue, these figures are beginning to represent nominal issues, for it is becoming rather difficult to negotiate for such supplies. Now, more than ever, does the prediction, made several months ago, that ground wool pulp would reach \$40.00 per ton, seem plausible. From the grinders come reports that they have little to offer. They are working their mills to capacity fulfilling obligations which carry them through the balance of the year. Those mills which have surplus stocks are asking tophigh prices.

It is most unfortunate at this time, but it is understood that, in various parts of the country, the water conditions are very poor and that it is with difficulty many of the machines are being kept in operation. In fact, some of the mills have been shut down a good part of the time, owing to lack of water power. This is a very serious condition, because the demand has reached extraordinary proportions. Not only is there the usual call for ground wood, caused by the Fall business, but there is an added demand, stimulated by the shortage of sulphites and the rush of many mills to substitute, as far as possible, the ground wood pulp. Present quotations have already reached \$30 per ton, f. o. b. mill.

Conditions in the sulphite markets seem to be growing worse, rather than showing any tendency to improve. Importations are very limited and it is apparent that the foreign producers are not at all very anxious to have much of their stock sent to this country. For, they say, the continent of Europe presents a much better paying field. It is understood that the Germans, the French, Italians, and the other countries which are able to get stock from Sweden are paying whatever is being asked—more than the current quotations in the United States. Domestic mills are working to capacity and the volume of imports from Canada has increased considerably, but the demand is of such proportions that it is impossible for the manufacturers to keep up with it. A great deal of interest is reported in the market, but mills still hesitate about paying the very high prices and are buying very cautiously, in the hope that the situation will improve in the near future. But indications are far from warranting such hopes. Bleached sulphite is to-day quoted—nominally—at as high as 9½¢ for foreign stock. Easy bleaching is going at about 6½¢—whenever it can be had. Domestic unbleached is quoted at about 4¢, but is also not available in large quantities. Foreign strong unbleached remains at about 5¢ to 5½¢. Krafts are to-day practically unobtainable. The producers are consuming whatever they have not already contracted to sell, finding it more profitable to convert the pulp into paper. Reports have been heard of instances where manufacturers have not found it possible to live up to their obligations and have had to stop deliveries on contracts. The nominal price for kraft pulp is about 5¾¢.

The rag market, as a whole, is very quiet. As the local dealers say, the situation is dependent on the action of roofing rags and, since these are inactive, the other grades are forced into a similar state. Reports from the roofing mills show that they are all working to capacity and that they have plenty of orders on hand. However, they are all pretty well stocked with rags and have no need to come into the market. It

seems to be understood in the trade, from the way the buying is going on, that the manufacturers are conferring possibly once a week and are informing each other of the various amounts of stock which have been offered by dealers and of the prices which have been named. In this way it has been possible for them to keep tabs on the rag men and to keep the market from advancing. Because of the inactivity in roofing, thirds and blues, solid whites, and the other grades of old rags have not been moving very well, nor have they been bringing the prices which the dealers expected they would be bringing at this time of the year. A slight increase, however, was noted in the demand for No. 1 new white rags. In fact, one rumor had it that a large lot of these rags had been sold at 10¢. It is known that a large writing manufacturer refused an offer at 9¢ and a little later wired an acceptance, but it was not taken.

Rope has been looming up strong within the past few weeks and the market is now verging the 6¢ mark. It is understood that there are lots of stocks in England, but these cannot be had because of the embargo so the domestic manufacturers find themselves facing a scarcity in this particular commodity. The demand is now improving and bids fair to continue so for some time.

The waste paper market has been characterized with considerable activity during the past few weeks. The shortage of sulphite has stimulated buying considerably and everyone is in the market looking for stock. Hard white and soft white shavings, in particular, are in strong demand and are reaching a stage where they will be hard to obtain. They are quoted about as follows: hard white, 4¼¢ to 4¾¢; soft white, 3 to 4¢. The demand for ledger, magazine and book stock is fairly strong and will most likely increase in strength, if present indications are to be taken into account. Ledger stock is at 2¼¢ to 2½¢; magazine, at 1¾¢; krafts, at 3¢, mixed papers, at 60¢ to 65¢.

In the paper market, the acute situation remains unrelieved nor is there any apparent sign of relief visible. This is true of all kinds of paper. The mills are all operating to capacity in the hope of catching up with orders, but this hope has been futile as will be realized when it is understood that some of the manufacturers are still working on orders received several months ago. Newsprint has been the miracle of the industry. Despite all of the schemes which have been published stating the many ways in which the newspapers were curtailing their consumption and saving paper, the demand is to-day as strong as it ever was. The mills are shipping more than 100 per cent of their production—drawing from their reserve supplies, so that these have dwindled to a dangerous degree. It would be hard to name a real quotation for newsprint at the present time for the only lots to be had are not those in the hands of jobbers who are asking as much as they can get for their stock.

Wrapping papers are still very hard to get. It will be interesting to know that many of the large consumers of wrapping paper have reached the stage where they find they cannot stand the cost and are making price as follows: so much for an article unwrapped, and so much for an article wrapped.

R. W. JOLLY.

ROOF TRUSSES COLLAPSE AT PLANT OF ONTARIO PAPER COMPANY, LIMITED.

On the 19th of September six roof trusses on the new machine room building, which is under construction at the plant of the Ontario Paper Company, Thorold, collapsed.

The building when completed will have fourteen trusses and at the time of the accident six trusses had been erected with the exception of riveting them. Seventy-five per cent of the rivet holes had been filled with proper bolts. The trusses were all tied together with purlins of 6" x 8" Long Leaf Yellow Pine.

When the six trusses were finished the guy line which held No. 1 truss was slacked off as it was felt that the steel work would support itself. When the guy line was loose the entire six trusses simply toppled over without any warning.

Mr. Sam Bartlett, who was working on this structure in the capacity of iron worker was caught between the falling structure and an 18" I. beam and was instantly killed. He was a resident of Sydney, Nova Scotia.

Careful examination of the steel was made after the accident and while a number of theories have been advanced to explain the failure nothing definite can be determined.

The collapse will not delay construction materially as the wreckage has been cleared away and new trusses are rapidly being built.

WHERE QUEBEC LEADS.

Not only does Quebec take effective measures against fire in her forest lands, but she takes effective measures to keep the forests in perpetuation, where they do not cover cultivable land. Quebec some years ago established a provincial nursery, and this year, in addition to the young trees planted on Crown lands, the provincial nursery shipped 400,000 seedlings to pulp and paper companies which are reforesting the lands they have cut over. The Laurentide company alone bought 250,000 of these young trees. A large number were sold to other pulp and paper companies and to private individuals. The Perthuis seignory alone bought 50,000 seedlings this year; and this is the sixth year in succession during which trees have been bought from the province for use in this seignory.—Hamilton Herald.

REGULATIONS RE WET PULP.

With regard to the importation of wet sulphite wood-pulp from Canada and the United States, according to a bulletin just issued by the Trade and Commerce Department, the British Royal Commission on Paper have decided that where they are satisfied that this pulp contains moisture in excess of the quantity contained in ordinary dry pulp, they will grant licenses for that excess up to, but not exceeding, 40 per cent. of the total weight, in the case of pulp arriving in the United Kingdom after August 7. The pulp must be imported on the ordinary licenses issued by the commission. The amount of moisture excess must be proved by the certificate of a competent chemist.

SHINGLES THAT WILL NOT BURN.

According to information in the hands of the West Coast Lumbermen's Association, an Iowa pharmacist after seventeen months experimenting, has produced a liquid which makes wooden shingles absolutely fireproof. In a test of the new fireproofing liquid, made at the University of Iowa by the inventor, a block of wood one-half inch thick was saturated with the fireproofing and then placed in running water for twenty-four hours. After that it was thoroughly dried again and held for one hour over a Bunsen burner, which had a temperature of between 700 and 1,000 degrees Fahrenheit, that being a much greater heat, it is said, than is developed in a conflagration. The wood was not burned and only charred very slightly at the point of the flame. The new compound is reported to be sufficiently low in cost to make it practical in connection with shingle manufacture, and when a shingle is saturated the moisture dries out, leaving an insoluble mineral fireproofing substance in the fibre cells of the wood, which cannot be washed out with water and is said absolutely to prevent combustion.

TO VISIT CANADA.

A special trade commission from Australia which will investigate overseas methods of manufacture and production, and conditions of employment, in timber, paper, iron and other industries will shortly come to Canada. The commission will be composed of experts, an equal number of representatives of capital and labor being arranged for. They will also visit the United States.

Two new wet machines are being placed in the Foley pulp mill at Thorold and a new grinder has been installed in the Davey mill, which is connected with the Foley plant and will shortly be operated in conjunction with it.

Waste hemlock tanbark remaining after tannin is extracted is being used by a number of mills in place of between 30% and 40% of expensive rag stock ordinarily used in making felt roofing.

A. A. McDiarmid, has resigned his position as chief engineer on the Mattagami Pulp and Paper Co., Toronto, and is now engaged in special work at Sault Ste. Marie.

OUR PULP AND PAPER EXPORTS.

The increase in the exports of paper, wood for pulp and pulp for the twelve months ending June last is 23.8 per cent. To a considerable extent this is due to advancing prices. It will be noticed that the export of wood pulp during the period of the twelve months in question has declined slightly. There is more wood available at the present time than a few months ago. Northern Ontario points report the most acute shortage, although the situation there has improved somewhat.

	1915.	1916.	1916.	
			To Britain.	To U.S.
Paper	\$16,200,635	\$21,256,296	\$1,032,786	\$17,759,018
Pulpwood	6,463,125	6,102,170	.....	6,102,170
Wood pulp	9,257,036	12,220,988	672,673	10,793,647
Total	\$31,920,796	\$39,579,454	\$1,705,459	\$34,654,835

PULP AND PAPER NEWS

Mr. H. Moore, secretary of the Clements Paper Co., Nashville, Tenn., spent a few days in Toronto and Montreal recently calling upon the trade.

W. J. Gage, President of W. J. Gage and Co., Toronto and the Kinleith Paper Co., St. Catharines, has been awarded \$4,000 damages by Arbitrator P. H. Brayton in his claim against the city of Toronto. In connection with the Bathurst street hill improvements a retaining wall was built which stood against the Gage property and the latter contended that the site should be treated as a business location. Mr. Gage witnesses declared that the damage done was several times more than what has been awarded. The official arbitrator took the view that the land occupied by the retaining wall should be paid for and no more and handed out judgment accordingly.

At the annual meeting held recently in Toronto, the report of the directors and the annual financial statement of the Spanish River Paper Mills, Limited, which have already been published in these columns, were presented. The improvement in the company's position was favorably commented upon. George H. Mead was re-elected president, P. B. Wilson, Vice-president, Thomas Gibson Secretary and A. H. Chitty Treasurer.

So serious has become the shortage of news print in Winnipeg, that the newspapers of that city have discontinued giving free copies to employees while all correspondents have been cut off and no free exchanges to other newspapers are given.

The district fire rangers around Port Arthur have returned to their homes having concluded their duties for the present season. The loss from fires in the Thunder Bay district this year was the smallest on record.

John Rumelhart, who was convicted of having stolen pulp wood in his possession, was sentenced at Port Arthur to twenty-six months in the penitentiary. In passing sentence upon him Sir Glenholme Falconbridge stated that the rights of pulp wood owners must be respected. The pulp wood in question was from a storage boom of the Horrigan Co., which was located at Black Bay.

The engagement is announced of Miss Edna Frances, daughter of Mr. and Mrs. Frank E. Mutton, Toronto, to Flight Lieutenant Arthur W. Kilgour, youngest son of Mr. Robert Kilgour of Toronto, President of the Trent River Paper Co., Frankford, Ont. Miss Mutton left this week for Bombay, India, where the marriage will take place.

Herbert C. Jarvis, General Manager of the Empire Wall Paper Co., Limited, Toronto, states that the price of all materials entering in the manufacture of wall paper, has increased by leaps and bounds during the past few months and the end is not yet in sight. A few months ago prices were advanced and the company expected that this increase would result in decreased sales but on the contrary the demand is steadily growing. With the large contracts which the firm have,

Mr. Jarvis says that he hopes to maintain net prices about the same as are today.

A charter has been granted to Canadian Wood Products, Limited, with headquarters in Toronto and a share capital of \$40,000. The company is empowered to manufacture and deal in lumber, pulp and other forest products.

Ald. A. H. Stratton, of Peterboro, who was for many years engaged in the stationery and wall paper business in that city and is a brother of the late Hon. J. R. Stratton, proprietor of the Peterboro Examiner, has, in company with his brother-in-law, T. F. Matthews, purchased the plant and business of the Review Printing and Publishing Co., Peterboro which has been in liquidation. The Review is one of the oldest in Ontario being established in 1853 by the Whites who later become owners of the Montreal Gazette.

The wholesale paper business in Montreal formerly carried on by John R. MacGregor has been taken over by John R. MacGregor and Thomas Harkness and is now conducted under the name of the MacGregor-Harkness Paper Co.

Port Arthur is to have a large sulphite plant, a free site being given the company on the north water front, of some 40 acres. An agreement has been entered into between the corporation and has several and astern capitalists. The bylaw will be soon voted upon by the ratepayers. The first unit is to be started within thirty days after the carrying of the measure, and be completed and in operation within one year. It will have a capacity of fifty tons a day and, inside of five years, the capacity is to be increased to one hundred and fifty tons whereupon the company will receive a deed for a further tract of land of ninety-seven and one half acres. It is expected that by the time the complete mill of one hundred and fifty tons is finished the outlay on buildings and equipment will be in the neighborhood of five million dollars.

It was stated recently, both in reports on the street and in some newspapers, that Hon. G. Howard Ferguson, Minister of Lands, Forests and Mines for Ontario had entered into a secret deal with a large paper company of Appleton, Wis., enabling that concern to export pulp from eight thousand acres of Crown lands in the Thunder Bay district, for manufacture in the United States. It was rumored that the law compelling all pulp wood on Ontario Crown lands to be first turned into pulp or paper in the province, before being sent out of the country, had been set aside by the simple provision of selling the land to the Appleton firm. Hon. Mr. Ferguson has given an emphatic denial to the charge, in which he stated there is not a word of truth, and adds that no suggestion had ever been made to him to allow pulp wood to be exported. He pointed out, in connection with tenders now being called for the right to cut pulp wood and other timber on the Pic river and other territory in the Thunder Bay district covering about 1,400 square miles that the provisions clearly state that the successful bidder must erect a pulp mill with a minimum capacity of one hundred and

fifty tons daily which, with its equipment, must cost not less than a million dollars, and also a paper mill with a capacity of one hundred tons a day. The tenders for the Pic River concession close on December 1st.

Thomsa Gain, sales manager of the Don Valley Paper Mills, Toronto, who has been ill for some time, is able to be around again and attend to his duties.

Rev. Dr. A. C. Crews, who is editor of the Sunday School publications of the Methodist Book and Publishing House, Toronto, has been elected president of the Toronto Chess Club.

Charles V. Syrett, of the Victoria paper and Twine Co., Toronto, has returned from a motor trip to Erie, Cleveland and other cities. He also visited the mills of the Hammermill Paper Co.

Thomas Wark, who for some time has been superintendent of the Deferiet mill of the St. Regis Paper Co., has resigned his position to enter upon his new duties as superintendent of the St. Maurice Paper Co. at Cap Madeleine, Que.

A charter has been granted to the W. E. Gallagher Printing Co., Limited, with a capital stock of fifteen thousand dollars and headquarters in Kitchener, Ont. to engage in printing, publishing, engraving, book-binding, etc. as well as to deal in paper boxes and stationery. The incorporators of the company are W. E. Gallagher, A. B. Robertson and C. E. Cornell.

LAURENTIDE POWER COMPANY.

An offering is being made of \$1,500,000 Laurentide Power bonds at 90 and interest.

The segregation of the Laurentide (Paper) Company's water powers last year, to the Laurentide Power Company, created a new and very powerful factor in the hydro-electric situation in the Province of Quebec, and particularly as regards Montreal.

The new company was formed by the Laurentide (Paper) Company, with a capitalization of \$7,500,000 of common shares, and the money derived from the sale 5% par value of first (closed) mortgage bonds, due 1946, and \$10,500,000 of these securities was used to finance the development of the water power to a present capacity of 125,000 horse-power.

CANADA'S PAPER EXPORTS.

In the year ended June 30, 1916, Canada's exports of paper were of a total value of \$21,256,296, as against \$16,200,635 in the corresponding period in 1915. Of this former amount \$17,759,018 worth or more than the total value of the 1915 export was sent to the United States.

CHEAPER DYES.

As a result of a discovery made at the Forest Products Laboratory at Madison cheaper dyes are now available in the United States. It has been found that dyes made of osage orange wood are a commercial success and can be placed on the market at a considerably less cost than foreign-made dyes can be purchased. Carloads of the wood are now in transit, consigned to eastern extract plants.

The anti union Presbyterians are talking of establishing a weekly paper to forward their cause. The matter is being seriously taken up by the Publication on Committee and the new paper will likely be a weekly.

WANT TO BUY DONNACONA.

According to a press despatch from Watertown, N. Y. as the Pulp and Paper Magazine was going to press the following story regarding the attempted purchase of the Donnacona Paper Company appeared:—

The Donnacona Paper Company, with mills located at Donnacona, Quebec, thirty miles from Quebec City in the St. Lawrence river, is the prize now sought by the French syndicate of Parisian newspaper publishers who failed some time ago to secure control of the Remington Paper and Power Company's group of mills near here.

The French interests were unable to get permission from the Government boards of France to send money from that country to the United States in time to close the deal before their option expired.

The Donnacona mills is a new mill, having been in operation but a year. It has an output of one hundred tons of paper a day. A feature that appeals to the fact that pulpwood can be bought much cheaper in Canada than on this side.

G. H. P. Gould, paper mill magnate and owner of the St. Regis and Gould Paper Companies, is president of the Donnacona company, with Walter N. Kernan, of New York, vice-president.

AN AMERICAN VIEW

According to an American exchange the following are the facts relating to Canada's pulp and paper industry:—

The new mills planned and in course of construction, and the extensions to existing ones, will, if carried out as intended, add a per-diem capacity of 840 tons of newsprint before the end of 1918. During the twelve months ended March last the amount of printing paper exported was \$463,204 tons, or at the rate of 1,544 tons per day, as compared with a tonnage of 292,579, or 975 tons per day, in the corresponding period ended March, 1914.

INTERNATIONAL PAPER INCREASES DIVIDEND

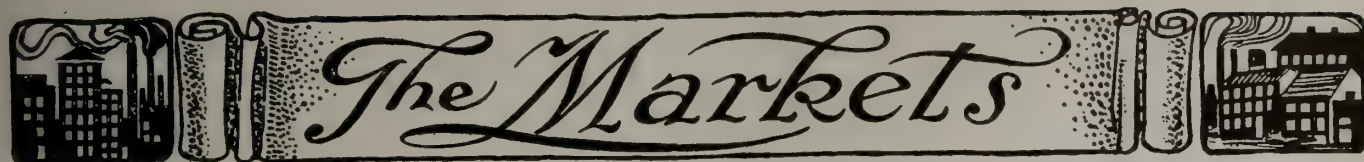
The International Paper Company doubled its dividend last week by declaring a quarterly distribution of 1 per cent., or 4 per cent. per annum on the preferred stock, as compared with the 2 per cent. annual rate maintained since 1908. There is \$22,407,000 of the preferred outstanding.

BUYING CANADIAN MILLS.

N. M. Jones of Bangor, Maine announces that at a conference of capitalists in New York, from which he has just returned, the sale of the largest pulp and paper mill in the Canadian Maritime Provinces to a syndicate of Maine and New York men was arranged. The property, for which it is said \$2,000,000 will be paid includes mills at the Reversing Falls, near St. John, N. B., and large timber lands in New Brunswick. The syndicate includes Hugh Chisholm of Portland, President of the Oxford Paper Company, and Maynard S. Bird, also of Portland.

PROTECT YOUR WIRE ROPE WHEN NOT IN USE.

When a shipment of wire rope is received and is not to be placed immediately into service, see that it is stored away in a place protected from the weather and any acid fumes. It is advisable to coat the outside layer of the reel or coil with a good lubricant.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The news print situation is now the liveliest subject among the trade and the seriousness of conditions is being brought home to publishers as never before. The mills are not assailed by some responsible for it all. While the war is unjustly charged with many ills in the way of trade disturbances, to attribute the present state of affairs entirely to the hostilities in Europe is quite correct, so far as Canada is concerned. Hundreds of men have joined the colors leaving most of the plants short of help and owing to abnormal demand and the embargoes which prevail, abroad—all due to the war,—there is not enough of that very necessity commodity — white paper — to go around. This in brief is, the exact state of affairs. In the past Canadian mills were looking for a market for their surplus product and were glad to make contracts covering a long period of time. News print was looked upon as staple and the variation in price from year to year was small indeed. Now the manufacturers do not know which way to turn. They could sell as much again as they are marketing if they had the productive facilities but of late months they have not been able to "pile up reserves", as the banks state, and the stocks on hand are rapidly diminishing.

The average publisher has read a great deal about this condition of affairs but as there have been so many extravagant reports in all lines prevailing during this stirring period, he did not think there was much truth in the statement. It was only when the newspaper men tried to renew contracts that he realized for the first time he was face to face with a situation such as he has never been up against. There is no use blaming it on the mills. They have done the best they could under most trying circumstances. They are running their plants to full capacity and they have not unduly taken advantage of the situation to boost prices in Canada. The increase asked is infinitesimal to what the makers can obtain for their product on the other side.

The story is going the rounds, and so far has not been denied, that one of the big new plants of Canada was approached by American interests who offered to take the whole of its output for the coming year at four and a half one cents at the mill but the proposition, flattering as it was, was turned down as the firm would not under any circumstances break faith with Canadian customers. Some sixty per cent. of the large newspapers whose contracts are now being carried until the end of the year and will have to be renewed are on the anxious seat.

A special meeting of the Canadian Press Association was held in Toronto last week at which there was a large attendance. The situation was thoroughly gone into. The statement was made that the output in Canada is now some eighteen hundred tons a day, yet only one sixth is consumed in the Dominion, the bulk of the

product being exported to the United States. A deputation was sent to Ottawa to interview the Minister of Finance, Sir Thomas White. There representatives of the pulp and paper interest were also assembled and the whole situation was gone thoroughly into. The result was that an offer was made by the news print makers of three cents, f.o.b. mill. This applies to large contracts and on smaller the figures may be higher. It was pointed out by the paper manufacturers, that everything entering into the production of news print has gone up from 25 to four hundred per cent and that labor has advanced about twenty-five per cent.

The upshot of the whole matter is that the newspaper publishers and the mill operators have appointed such committees which will go exhaustively into the problem. A joint meeting will be held at an early date before R. W. Breadner, who is the tariff expert for the Dominion and the question of supply, cost and future outlook will be canvassed thoroughly. This meeting will be held in Ottawa and if an amicable arrangement cannot be reached, the federal authorities may fix the selling price.

One interesting statement was made at the conference and that was if the fifty to sixty per cent increase went into effect on new contracts, it would mean an annual extra cost to Canadian newspapers of about two million dollars. One peculiar feature is that while publishers are talking of increased cost of producing papers the weekly newspaper men are the only ones who have so far raised their subscription rates. The increase is from one dollar to one dollar and half a year. A few dailies that have been selling at three dollars in the smaller cities have jumped their subscription price to four dollars but the larger dailies still continued to be delivered at the old price and the wonder is why the proprietors do not raise the figure for same.

In the book and writing line prices are stiff and are now fully fifty per cent higher than they were a year ago. The producers think there will be no further raise for some months and in view of abnormal conditions generally the users of these kinds of papers appear to be satisfied that the mills are not asking too much. Tissue plants are running away behind in orders and have business enough on hand to keep them going for the next four months even if no more orders were placed with them. The jobbers report that business is good and the demand for all lines of paper keeps up well. There has been an advance on "B" manilla but other lines of wrappings and kraft remain unchanged.

Ground wood pulp is in strong requisition and many inquiries for the commodity can not be bought filled. The price now quoted at the mill is from twenty-eight dollars up and some deliveries in Wisconsin and other states have brought as high as thirty-five dollars. Easy bleaching sulphite is now sold at one hundred and twenty dollars at the mill and some large business has

been placed at this figure. Sulphate pulp is quoted at one hundred and twenty dollars at the mill and is going higher all the time. Very little is being offered.

In the rag and paper stock market manilla, krafts whites and mixed papers are all in strong demand and there is a good business being done. The market for cotton and roofing rags is rather quiet. The outlook for fall trade at firm prices is most promising.

There has been an increase of a cent a pound on all on natural, bleached and half bleached grease proof. Genuine vegetable parchment is now quoted from twenty to twenty-five cents. It is likely that the latter will be made in Ontario before very long. Since the war broke out and certain mills turned their attention to making specialties and former brands of paper that have been imported, the manufacturers of these are not sorry that they took the step. Their goods now have achieved a fixed place in the favor of customers.

Board of all kinds has taken a jump of about fifteen per cent and the mills are away behind in their orders. The following prices will prevail until the end of the year and are based on the minimum quantity of car load lots — grey folding pulp board \$100; folding pulp \$90; pulp non bending \$80; pulp non bending lined on side \$90; filled board plain \$80; filled board lined one side \$85; filled board (chip mills) \$78; jute, chip, straw and straw chip \$70; same lined one side \$75.

The following are the Toronto prices:

Paper.

News (rolls) \$3.00 up, at mill, in carload lots.
News (sheets), \$3.25 and higher for small lots. at mill, in carload lots.

Book papers (carload), No. 3, \$7.00.
Book papers (ton lots), No. 3, 7.00c to 8.00c.
Book papers (carload), No. 2, 8.50c to 9.00c.
Book papers (ton lots), No. 2, 8.75c to 9.50c.
Book papers (carload), No. 1, 9.00c to 9.75c.
Book papers (ton lots), No. 1, 9.25c to 10.00c.
Sulphite bonds, 11 cents up.
Writings, 9 cents up.

Grey Browns,	\$3.75 to \$4.25
Fibre,	\$6.50 to \$7.50
Manila, No. 1	\$7.00 to \$8.00
Manila, B.	\$5.00 to \$6.00
Unglazed Kraft.	\$8.50 to \$9.50
Glazed Kraft.	\$9.00 to 10.00
Tissues, bleached.	\$1.60 to \$2.30
Tissues, (manila or white sulphite) . . .	\$1.20 to \$1.60
Tissues, cap.	80c to \$1.15
Natural, greaseproof	13c to 18c
Half Bleached Greaseproof	15c to 19c
Bleached greaseproof	17c to 21c
Genuine Vegetable Parchment	22c to 25c
Drug papers, whites and tints.	9c to 12c
Paper bags, Manila	30% discount.
Paper bags, kraft,	15% discount.
Confectionery bags,	15% discount.

Pulp.

F.O.B. Mill.

Ground woodpulp	\$31.00 to \$32.00
Easy Bleaching Sulphite	6c
Sulphite, news grade	5c to 5½c
Sulphite (bleached)	8c to 8½c
Sulphate	6c

Paper Stock.

No. 1 hard shavings	\$4.00
No. 1 soft white shavings	\$3.50
No. 1 mixed shavings	80c
White blanks	\$1.35
Heavy ledger stock.	\$2.35
No. 1 book stock.	\$1.57½
No. 1 Manila envelope cuttings	\$2.20
No. 1 print Manilas	\$1.25
Folded news	77½
Over issues	77½
No. 1 clean mixed paper.	65c
Old white cotton	\$4.65
Thirds and blue	\$2.75
No. 1 white shirt cuttings	\$7.25
Black overall cuttings	\$2.75
New light flannelettes	\$5.50
Ordinary satinets and flock	\$2.00
Tailor Rags	\$1.90

MONTREAL MARKETS.

Book—News—Writing and Posters.

Roll News, \$3.00 for carloads proportionate increase on small lots.

Sheet News, \$3.25 carloads, \$3.50 up small lots.

No. 1 Book, 7.50 to 8.25.

No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.

No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.

Writings, 6.95 to 10.

Writing Manila, 6.95.

Cover papers, 11 to 14½c, according to colors wanted.

Colored Poster, 6½ to 7½c.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs.	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs.	3.40	3.65	3.90

DYES AND EYE FATIGUE.

The shortage of dyestuffs since the war has led to newsprint and some other papers being made of "natural" darker shade of color, and the Madison laboratory has been investigating the question of whether this darker color produces any additional eye strain or eye fatigue. The investigations show that it does not. This is in line with the generally-held opinion previously that eye fatigue would be even less where paper was not brilliantly white, on account of the lessened contrast between the ink and paper.

Soluble Chinese Blue

By a very fortunate purchase of Raw Materials of which we have a considerable quantity yet to arrive, we are able to offer our standard qualities of Chinese (Prussian) Blues at favorable prices.

Full Strength Brilliant Tone
Attractive Price

Samples and Quotations cheerfully given

We manufacture Paint and Varnish Products for every purpose

WHITE LEAD

CEMENT STAINS
CONCRETE PAINTS

FACTORY ENAMEL WHITE
STRUCTURAL PAINTS

Manufactured by

BRANDRAM-HENDERSON
LIMITED

MONTREAL · HALIFAX · ST. JOHN · TORONTO · WINNIPEG

INTERNATIONAL PAPER.

One of the largest independent newsprint producers in the United States has recently admitted in private that the prospects were most excellent that International Paper in 1917 would earn at least \$10,000,000 net.

In addition the company will have accumulated surplus net profits during 1916 of not far from \$3,000,000. This means that during the next 15 months this company stands a good chance to have \$13,000,000 and possibly \$15,000,000 with which to pay interest and dividends and adjust capitalization.

This balance after allowing for interest and the full 6% dividend on the preferred would amount to not less than \$10,000,000 on the assumption of an earning balance of only \$13,000,000.

International Paper directors will then have the alternative propositions facing them of setting up \$8,000,000 cash to meet the maturity in February, 1918, of \$8,291,000 6% first mortgage bonds. Or they can use \$7,393,000 of this surplus in paying off in cash the 33% in accrued dividend on the preferred up to July 1 last.

In case cash is used to cut down bonded debt it is perfectly fair to assume that new preferred stock for the amount of the accrued dividends could be issued. There would be a smaller increase in dividends on the new preferred than in interest on the 6% bonds coming due. In addition cutting down of total bonded debt to about \$6,500,000 would put the company in very strong financial position.

THE AMERICAN DYESTUFF INDUSTRY.

Opportunities for manufacture of dyestuffs, chemicals and war supplies, development of oil and gas fields and operation of shipping concerns which have opened up since war have resulted in formation in United States of new companies with authorized capital stock of \$804,227,000.

AMERICANS INVADE CANADA.

A syndicate, which includes Hugh Chisholm of Portland, president of Oxford Paper Co., and Maynard S. Bird, also of Portland, has acquired paper mills at Reversible Falls, timber limits at Nashwaak and other streams, and 500,000 acres of timber lands in province of New Brunswick. Deal involves \$2,000,000.

A FUTURE FOR WOOD ALCOHOL.

Dr. A. D. Little, Boston chemist, says alcohol is the only fuel which promises to take the place of or hold down the price of gasoline, because it is best fuel for internal combustion engines and can be produced in sufficiently large quantities to meet demand. He stated that 600,000 gallons a day could be made from sawdust in yellow pine district, from the 10,000,000 tons of material available every year.

PAPER STRIKE FAILS.

Strike of paper makers at mills of S. D. Warren & Co., Westbrook, Me., was ended Friday night. Men sought recognition of their union, which was not obtained.

UNION BAG & PAPER.

Earnings of Union Bag & Paper Co. are understood to be running in excess of \$150,000 monthly. For the first six months of this year the company reported net earnings in excess of \$500,000, the greater part of which were realized in April, May and June.

Final papers of agreement for merger of Union Bag & Paper Co. and Riegel Bag Co. into Union Bag & Paper Corporation with \$10,000,000 capital stock were filed at Trenton.

Holders of Riegel stock will be paid in cash the par value of their holdings and holders of the \$11,000,000 Union Bag & Paper preferred will receive \$8,000,000 of new stock, while holders of \$16,000,000 common will receive \$2,000,000 of new stock in exchange for their holdings.

Interests in close touch with Union Bag & Paper affairs are confident that when the new \$10,000,000 of Union Bag & Paper Corporation stock makes its appearance directors will be able to place it on a 5% dividend basis immediately.

THE UNITED STATES PAPER INDUSTRY.

The paper making industry in the United States is second in importance only to the steel industry. The total invested capital is estimated at \$500,000,000, in round numbers, while the annual value of the manufactured product of pulp and paper amounts to \$350,000,000.

There has been a colossal development in the industry since the census of 1899. Within the space of ten years from 1899 to 1909 the percent of increase of capital was 144.4; value of products 110.2, and persons engaged in the industry 53.7. This rate of expansion was maintained for a few years, but owing to the exhaustion of pulpwood forests contiguous to mills within the borders of the United States, and partly as a consequence of our tariff policy, the growth of the business has received a check, which can not be overcome except by the discovery of new woods and materials for papermaking in the United States or by adequate tariff protection. At the moment of the industry of pulp manufacture is gravitating toward Canada where the supply of timber and the available hydro-electric power appear to be unlimited.—(Paper).

A ROMANCE OF MODERN INDUSTRY.

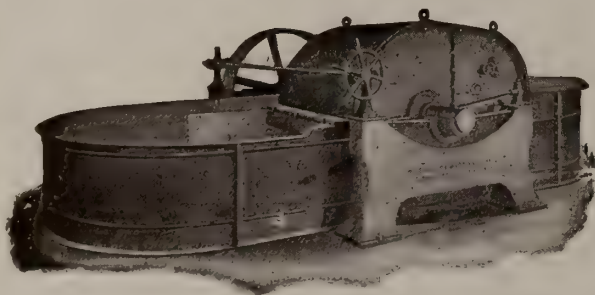
In the world of literature that most elusive and fascinating word "romance" has been appropriated by poets and novelists who have written and sung through all the ages of the glories of "wine, women and song." There are some who would tell us that in the hurry and bustle of modern life romance is dead and a hard commercialism absorbs the heart and ambition of the people of today. This is far from being the case. Rather has this magic word, and the joy it stands for, expended to embrace the realization of the dreams of the industrial leaders, for there is no happiness as complete as the accomplishment of high ideals which have formed the goal of years of patient labour.

In the immense enterprise of the North American Pulp and Paper Companies we find the practical realization of the dream of their originator, Mr. J. E. A. Dubuc. Thanks to the untiring genius and inspiration of this tireless worker, the powerful organization of today with its capitalization of \$30,000,000, is the successful outcome of an insignificant pulp mill on the Saguenay River, which was started in 1897 capitalized at the modest sum of \$50,000. From this beginning we can trace the rapid growth of the Chicoutimi Pulp Co. through nineteen short years to the date of its amalgamation of a few months ago with the St. Lawrence Pulp and Lumber Corporation of Chandler, Gaspe, the Tidewater Paper Mills of Brooklyn, New York, and the Freehold Estates Limited of New York.

Towards the total production of the North American Pulp and Paper Companies, the two mills of the Chicoutimi Pulp Co. at Chicoutimi annually contribute 90,000 tons of mechanical pulp, and the St. Lawrence Pulp and Lumber Corporation, 36,000 tons of sulphite pulp. In 1912 a third mechanical pulp mill was erected at Ouatouchouan on Lake St. John with a capacity of 60 tons a day, and at the present time a fourth mill is under construction at Ha! Ha! Bay on the Saguenay.

The company's leasehold estates extend over 1,360,000 acres far into Northern Quebec on the banks of the Peribonka River, and are capable of supplying 22,000,000 cords of pulp wood yearly. With such unlimited resources of raw material to draw upon, the Tidewater Paper Mills of Brooklyn, the sixth mill in this extensive combination is successfully turning out a production of 27,000 tons of paper annually.

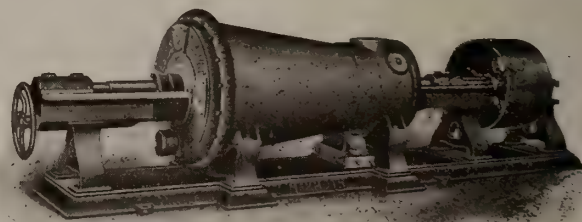
Beating Engines, Cooking Engines, Washing Engines, Mixing Engines
IRON OR WOOD TUBS



THE NOBLE AND WOOD MACHINE CO.

JORDAN ENGINES

7 sizes Belt or Motor Driven



HOOSICK FALLS, N.Y.

Board Machines, Dusters, Stuff Chests, Pumps, etc.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acid Systems:

Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:

Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Barkers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Bearings:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Beaters:

Bertrams Ltd., Edinburgh, Scotland.
Claflin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Belting:

Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.

Belt Conveyors:

The Jeffrey Mfg. Co., Montreal, Que.

Bleaching Powders:

Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:

Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:

Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:

Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:

Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.

Brass Wire Cloth, Fourdrinier Wires:

Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:

The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calendar Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:

Northern Crane Works, Walkerville, Ont.

Cars, Dump and Flat

Fraser, W., Montreal
Sessenwein Bros., Montreal

Castings:

Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.

Chain Crane:

Northern Crane Works, Walkerville, Ont.

Chain Blocks:

The Jeffrey Mfg. Co., Montreal, Que.

Chain Conveyors:

Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):

Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:

Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:

Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chimneys:

Canadian Kellogg Co. Ltd., New York.

China Clay:

China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:

The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyers:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Condensers—Barometric:

Canadian Kellogg Co., Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.

Conveying Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:

Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.

Couplings:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:

Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:

Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:

Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:

Bertrams, Ltd., Edinburgh, Scotland.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:

Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:

Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Diffusers:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digesters:

Canadian Kellogg Co. Ltd., New York.

Digester Lining:

Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Dryers:

Bertrams, Ltd., Edinburgh, Scotland.

Engines:

Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Evaporators:

Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Montreal, Ont.

MILL SUPPLIES---Continued

Filters:

Darling Bros., Montreal, P. Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Gears:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grate Bars:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Hangers:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Meaters:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.

Iron Castings:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
Lobb & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.

Knives:

Fraser, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hay, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Latex Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Overhangs:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotives:

Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built:

Sessenwein Bros., Montreal
Fraser, W., Montreal

Machinery:

Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
Bechtel Iron Works, Beloit, Wis.
Bertram, James & Son Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Broomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Eastdown Mfg. Co., East Downington, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P. Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Shutt, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith J. M., New York, N.Y.
Walmsley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. F., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. E. Wilkison, Toronto, Ont.

Refrigerators:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Roller Drums:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Piping—High Pressure:

Canadian Kellogg Co. Ltd., New York.

Piping—Hydraulic:

Canadian Kellogg Co. Ltd., New York.

Piping—Power Plant:

Canadian Kellogg Co. Ltd., New York.

Piping—Welded:

Canadian Kellogg Co. Ltd., New York.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Broomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulleys:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
Stancuffie Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P. Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Radial Brick:

Canadian Kellogg Co. Ltd., New York.

Railway Equipment—Scrap:

Sessenwein Bros., Montreal

Rails—re-laying:

Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Reinforced Concrete:

Canadian Kellogg Co. Ltd., New York.

Rope, Cotton and Manila:

Jones and Glasco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Safes:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal, Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. F., Peterboro, Canada.

Shafting:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Shredders:

The Jeffrey Mfg. Co., Montreal, Que.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

MILL SUPPLIES---Continued

Soluble Blue:

Brandram-Henderson Ltd., Montreal.

Spiral Conveyor:

The Watrous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Montreal, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Montreal, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Stacks:

Canadian Kellogg Co. Ltd., New York.

Steam Appliances:

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Penmans, Ltd., St. Hyacinthe, Canada.

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Tanks—Welded:

Canadian Kellogg Co. Ltd., New York

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Jones & Glassco, Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Watrous Engine Works Co., Limited Brantford, Ont.

Traveling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurtemberg, Germany

Valts and Valt Doors:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulps:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R. Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, O. t.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Eas. Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfound

land.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Irisato:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catherine's, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmillier, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catherine's, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverville, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catherine's, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER MILLS

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catherine's, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Teese & Persse, of Alberta, Limited.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Teese & Persse, of Alberta, Limited.

VANCOUVER, B.C.:

Brake, Creedon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

H. G. Smith, Ltd.
Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104 Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Morton C. A. 34 King William.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

FORT WILLIAM, ONT.:

Tees & Persse.

TORONTO, ONT.:

Barber-Ellis Co., Ltd., 71 Wellington Street W.
Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
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Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. DeWolf, Herald Bldg.
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Rolland, J. B. & Son, 14 St. Vincent.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A	
Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
Ayers, Ltd.....	68
B	
Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge Paper Co Ltd.....	13
Beveridge, Jas., Chatham, N. B.....	62
Black-Clawson Co.....	62
Boving Hydraulic & Engineering Co. Limited.....	6
Bowater, W. V. & Sons, Ltd.....	8
Brandram-Henderson Ltd.....	49
The Bronson Company.....	
C	
Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	3
Canadian Fairbanks-Morse Co., Ltd.....	61
Canadian Kellogg Company.....	6
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	
Capital Wire Cloth Mfg. Co., Ltd.....	6
Carthage Machine Co.....	10
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	
Christie George, Ltd.....	62
Churchill & Sim.....	
Claflin Engineering Co.....	60
Crossley, T. L.....	65
D	
Darling Bros., Ltd.....	13
DeCew, J. A.....	64
Dean & Son.....	8
Dept. Lands, Forests, Mines.....	60
Disston, H. & Sons, Ltd.....	
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	
E	
Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9
F	
Farrel Foundry & Machine Co.....	11
Ferguson, H. S.....	64
J. Ford & Company.....	
Fraser, W.....	
G	
Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	
Glens Falls Machine Works.....	
Goldie and McCulloch Co., Limited.....	

H	
Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huyck, F. C., Sons.....	12

J	
Jeffrey Mfg. Co.....	14
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6

K	
Kimball H. S.....	4
Klipstein, A. & Co., Ltd.....	7

L	
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	13

M	
Mackinnon, Holmes & Co.....	
Main Belting Co. of Canada Ltd.....	60
Marx, J. & Co.....	65
Meincke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd.....	63
Moore & White Co.....	15

N	
Noble & Wood Machine Co.....	49
Northern Crane Works, Ltd.....	
Norwood Engineering Co. of Can. Ltd.....	13

O	
Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P	
Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	

R	
Rice, Barton & Fales Machine & Iron Co.....	66
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	8

S	
Sadler and Haworth.....	50
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jas. W.....	65
Scott, Ernest & Co.....	62
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	8
Smart-Turner Machine Co.....	68
Spielmann Agencies.....	65
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T	
Taylor, J. A.....	62
Ticonderoga Machine Works.....	

U	
Union Screen Plate Co. of Canada, Ltd.....	
Union Sulphur Co.....	18

V	
Vera Chemical Co. of Canada, Ltd.....	6
Voith, J. M.....	12

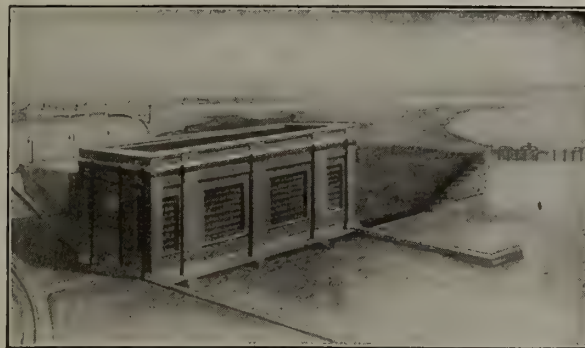
W	
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	
Wilson-Paterson Co.....	



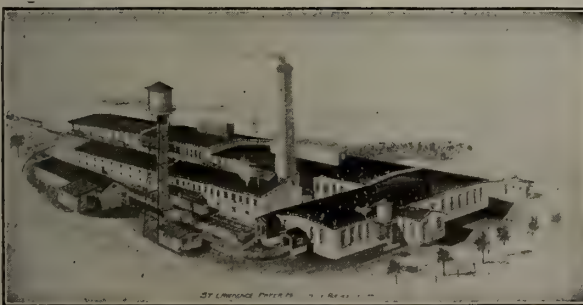
Paper Mill, Barber Division, Georgetown, Ont.



Montrose Division, Thorold, Ont.



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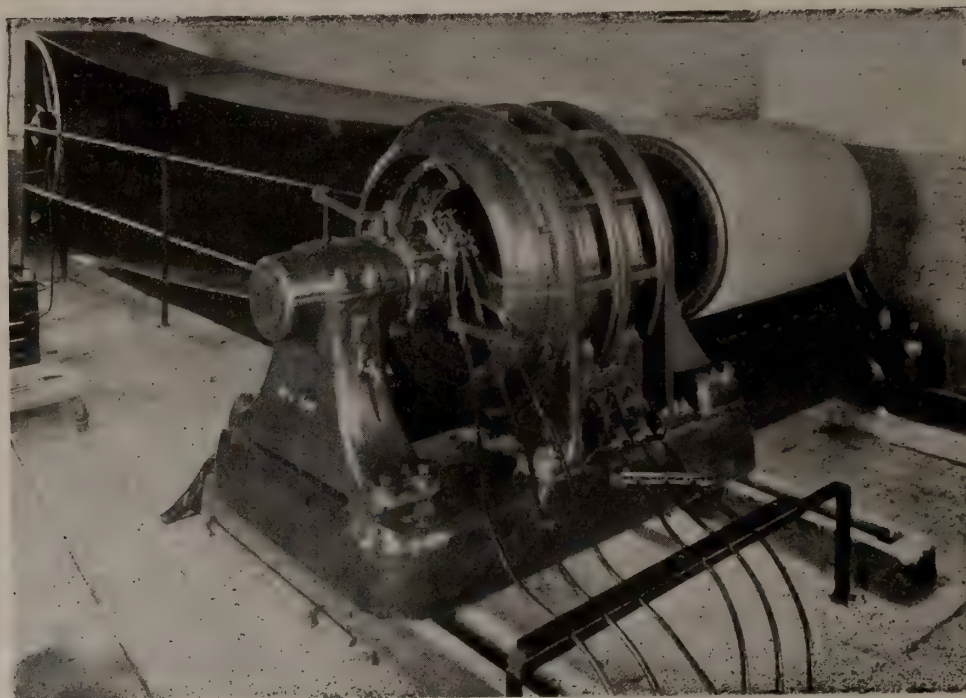
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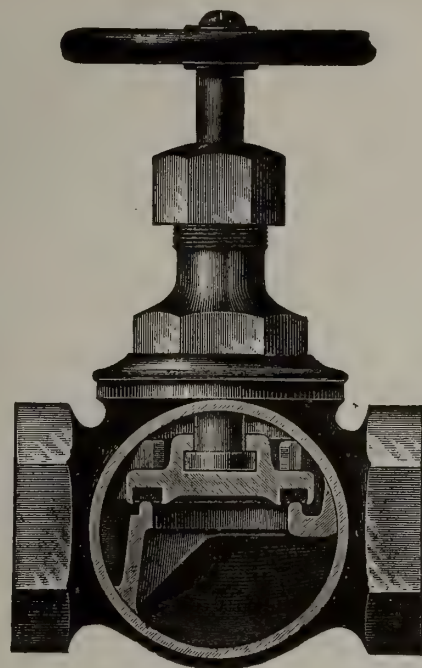
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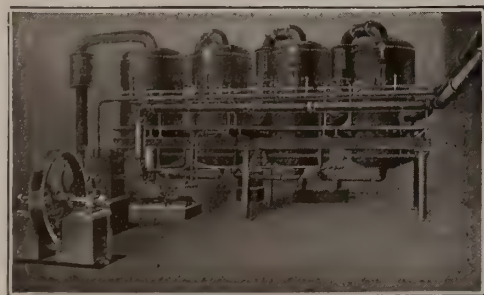
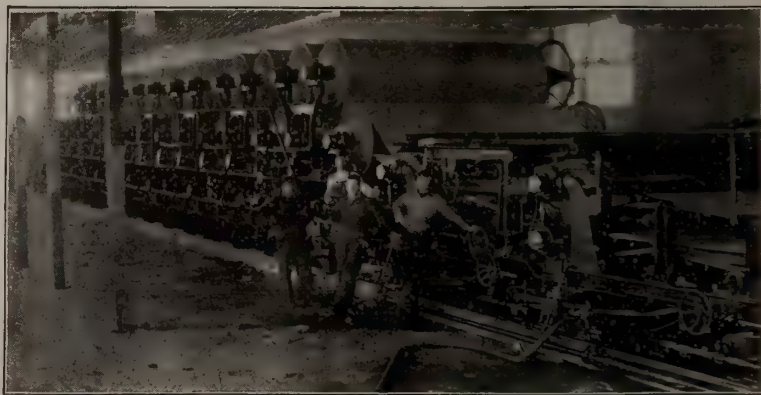
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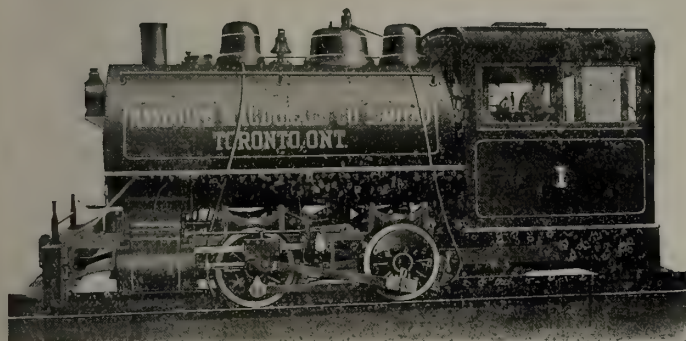
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Our Paper and Kraft Bags (made under the most
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HIGH GRADE PAPER MAKERS

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Superfine Linen Record, Earnscliffe Linen Bond,
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These Papers are Standard in their respective grades
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Take Advantage of the Increased
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Canadian Wood Pulp

We can sell at attractive prices all the Wood Pulp you can supply, and if you desire will arrange long term contracts. We have handled 90 per cent. of Canadian Wood Pulp imported since 1900.

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GUARANTEED

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Fast Running Felts

Felts for High Finish, Plate Felts

Special Felts for Save-alls and Hydraulic Presses

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BEST ENGLISH PULP STONES

from our celebrated DARLEY DALE Quarries,
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Established
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For
Pulp and
Paper Mills



The Pickle Automatic Steam Regulator

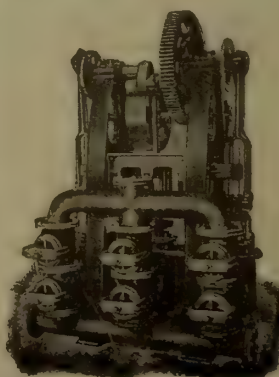


Saves steam

It also retains the proper amount of moisture in the paper thus eliminating the breaks at the calenders.

This regulator gives you a higher and more uniform finished paper with less calendering.

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Everything in
PUMPING MACHINERY
for pulp and paper mill
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Special Features

in this Issue:

FRACTICAL OPERATION OF THE
MODERN BOILER ROOM

DIGEST OF THE PAPER, CHEMICAL &
MECHANICAL PULP MARKETS
OF THE WORLD

NEWS

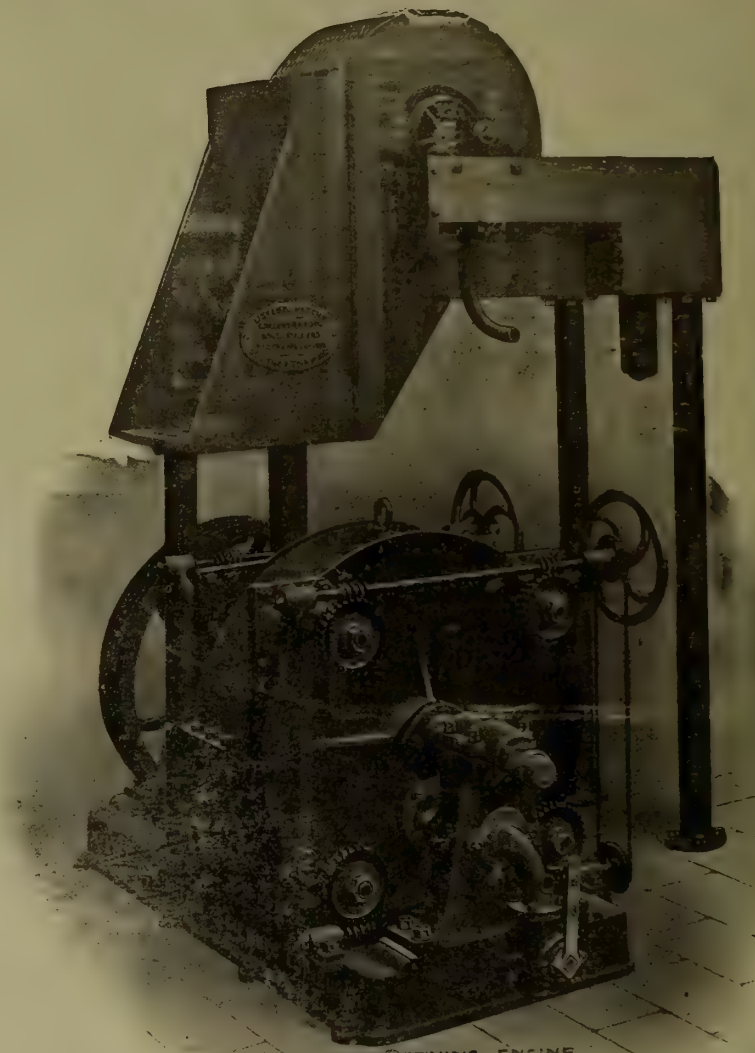
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

Bertrams Limited



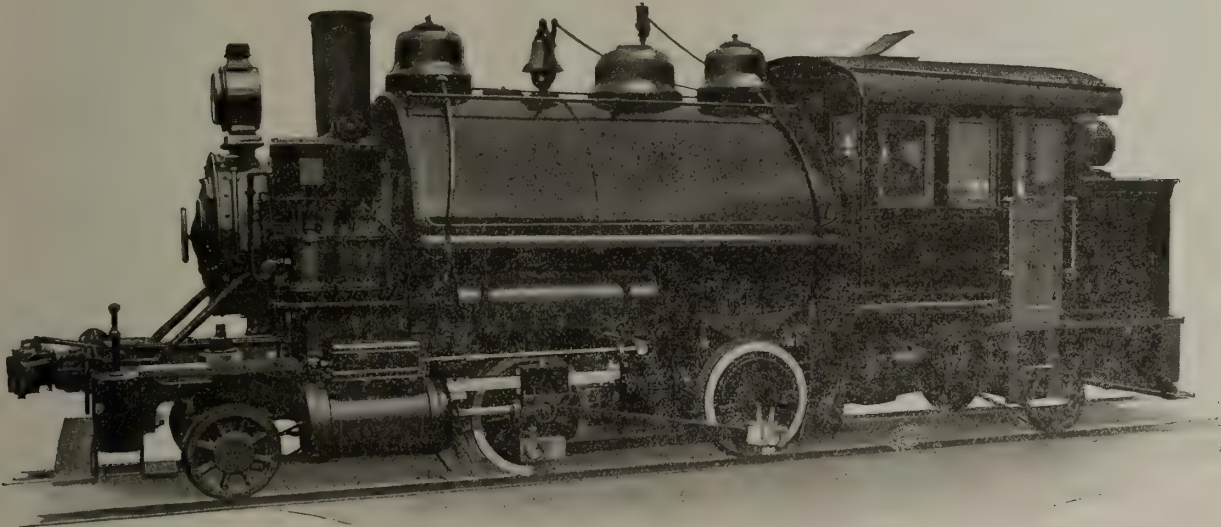
MILNE'S PATENT REFINING ENGINE
(WITH LISTER'S PATENT CONCENTRATOR)
Code Word "REFIN CONCE"

THE ACTION OF THIS REFINER IS PERFECT
owing to the fact that pulp will not pass through the second set of Bars
UNTIL PROPERLY REDUCED
Fibres which are sufficiently reduced pass easily through, while the unreduced Fibres
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BEFORE THEY CAN PASS OUTWARDS

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MCNEILL'S 1908

Telegrams, "PUMPS, BURY."

Telephone, BURY 499

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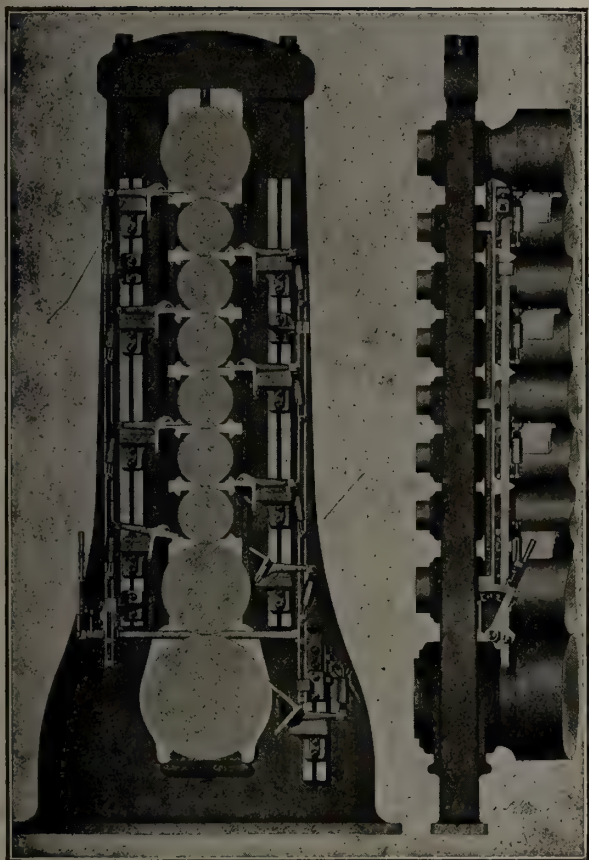
Complete Paper Mill Plants
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With Flexible Blades, Universal
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Ask for List of Installations

Doctors can be thrown into "working" or "off" position by means of operating lever, which controls all Doctors; and by adjustment of quadrant, pressure is applied equally on all Doctors, and distributed over every inch of every Doctor, the Doctors being so balanced that little effort is required. The Flexible Blade conforms to the Roll, giving perfect Doctoring effect with the least amount of pressure. Doctors are constructed of steel, light and strong, and may be fitted to any type of Paper Machine Calender.

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Avoid leaky seams, which are the source of much trouble and loss, by using our

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We make them any thickness, diameter or length for all uses in Paper and Pulp Mills. Welding is done by the forge and hammer process which is the strongest method known. Write for book WO

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WATEROUS Improved DRUM WASHER

The sturdiest, nicest operating, best built washer you can buy.

Ten turns of the hand-wheel will raise it the full 22".

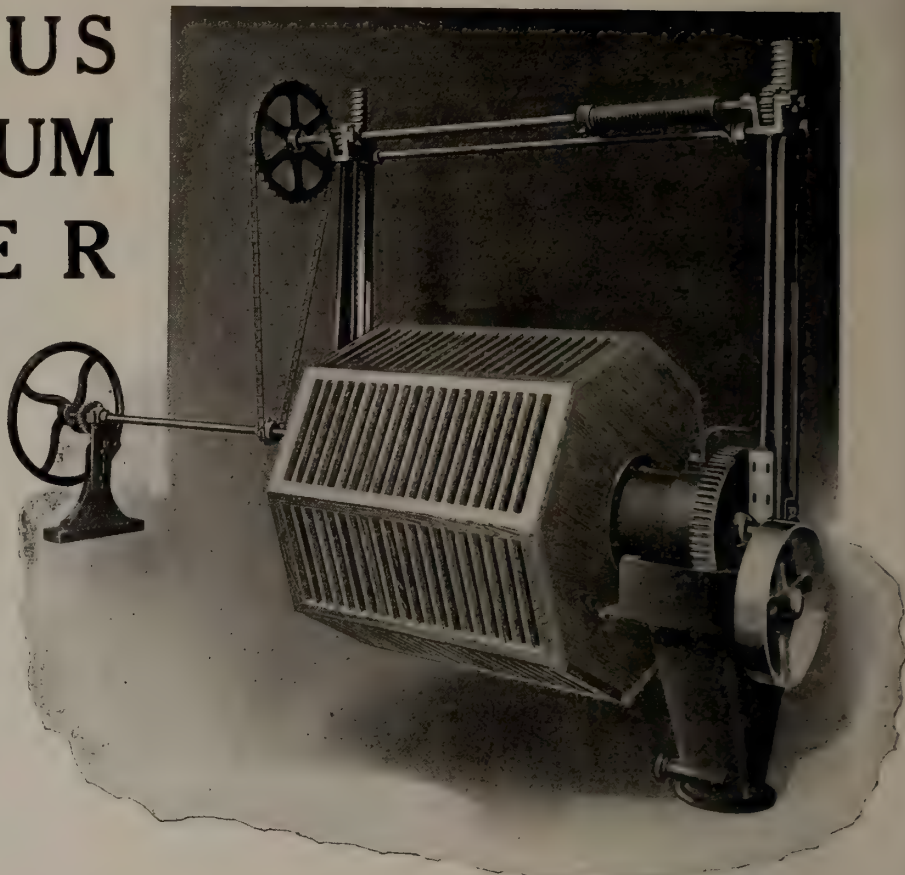
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It runs easily, handles easily and for these reasons is always in use.

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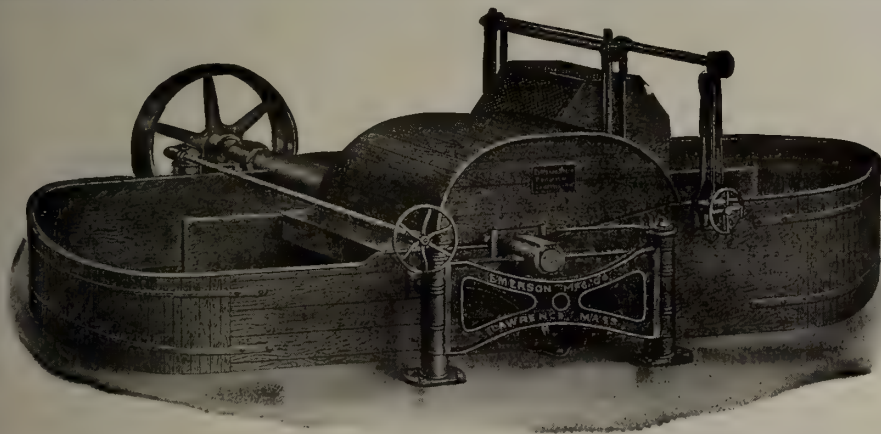
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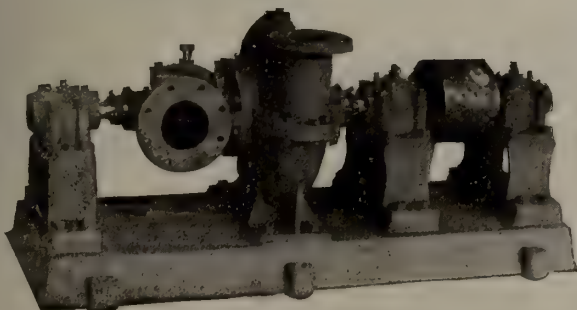
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IMPROVED WARREN
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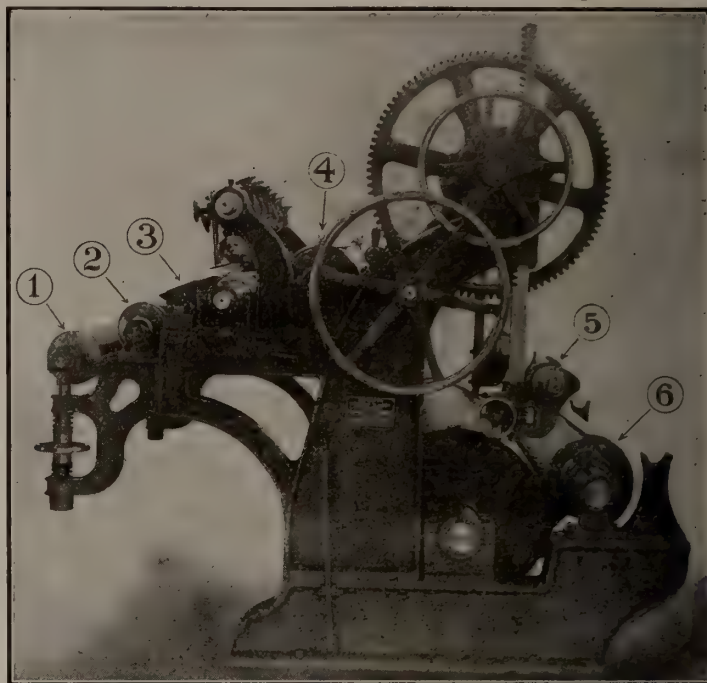
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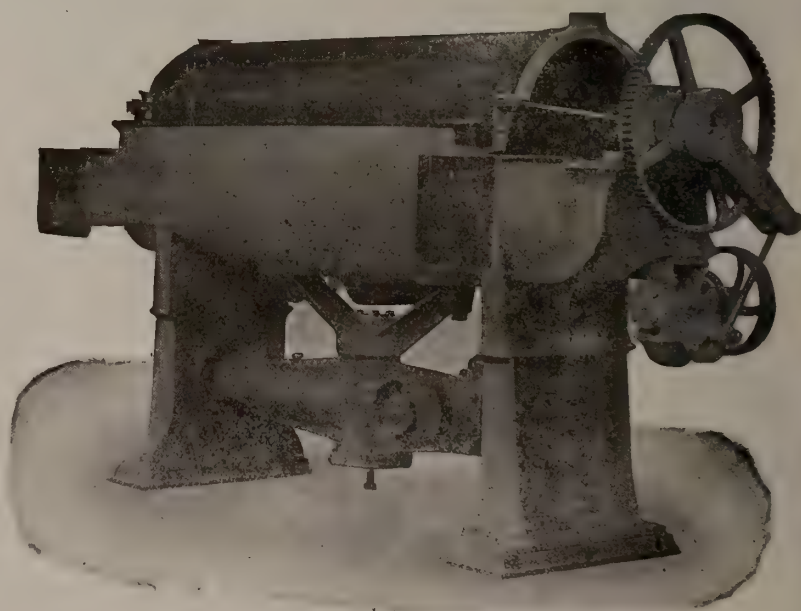
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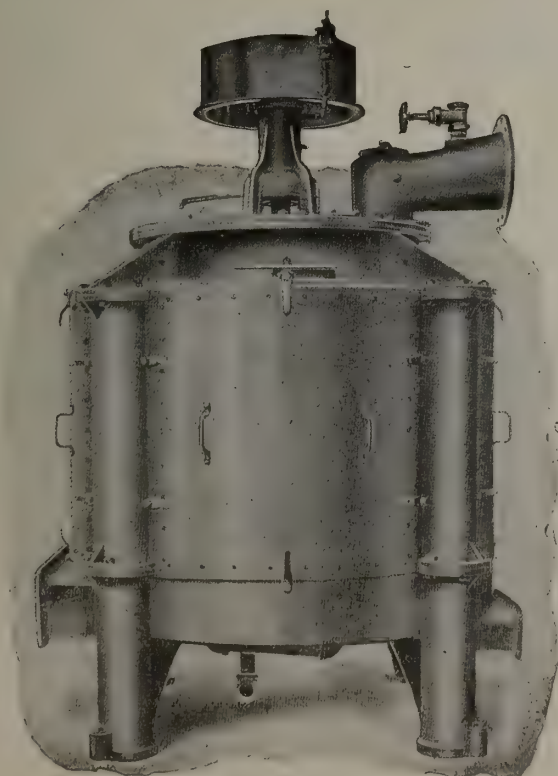
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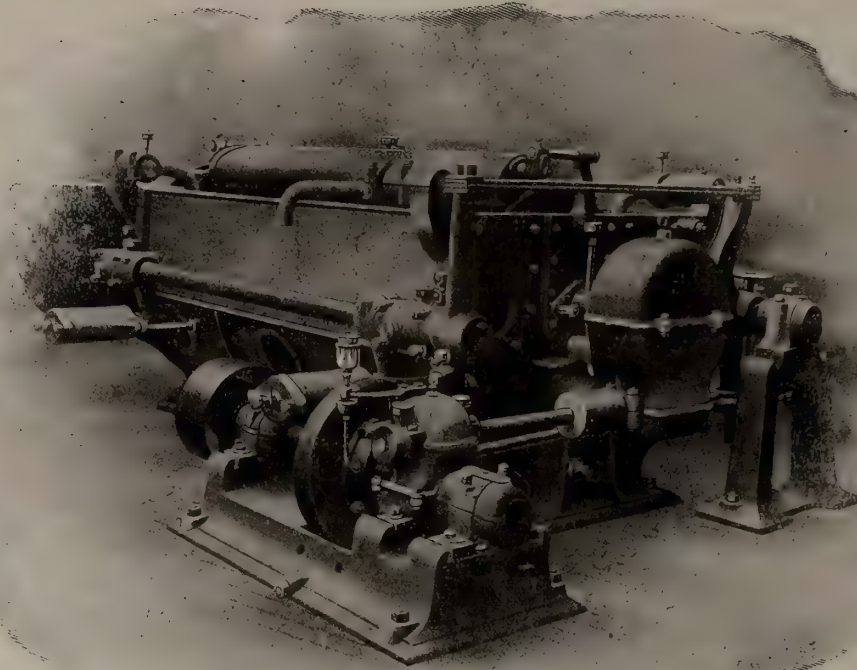
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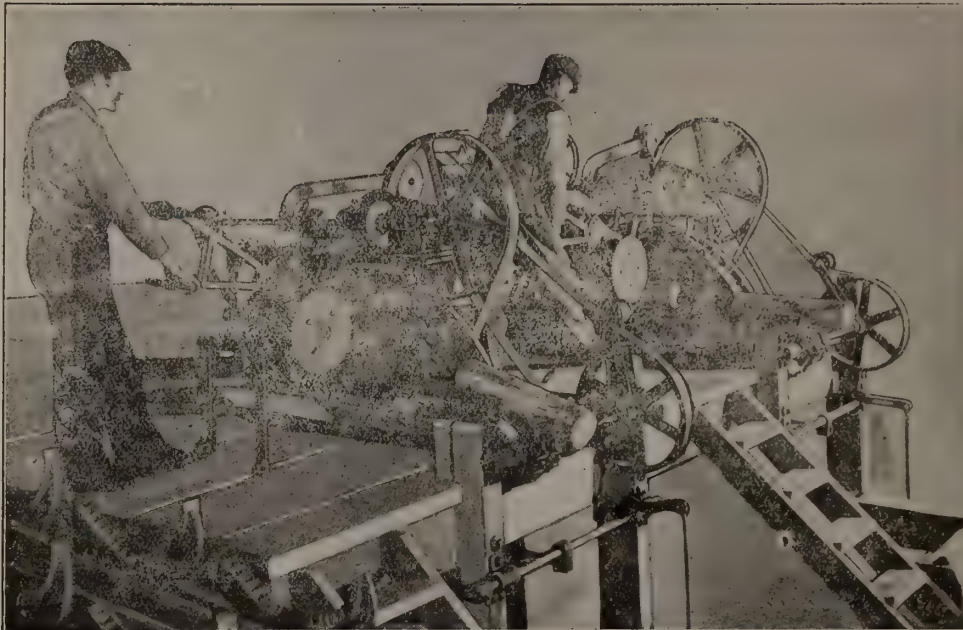
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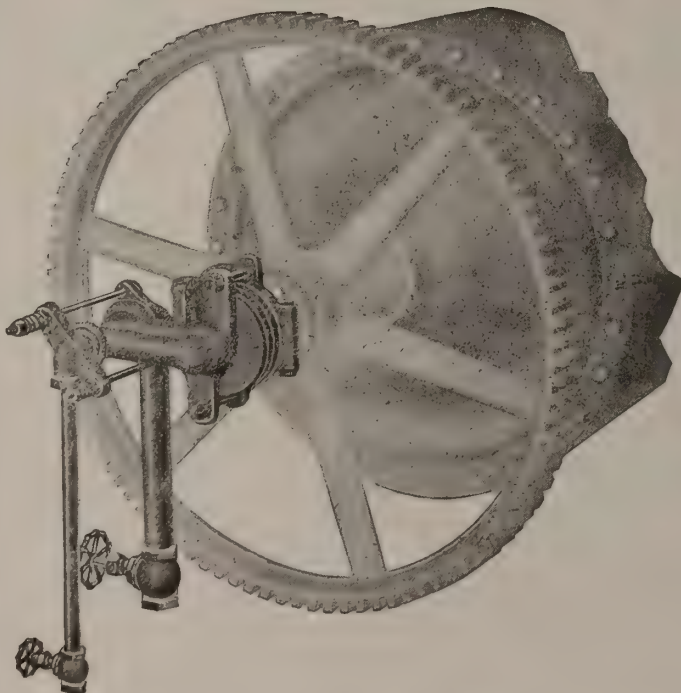
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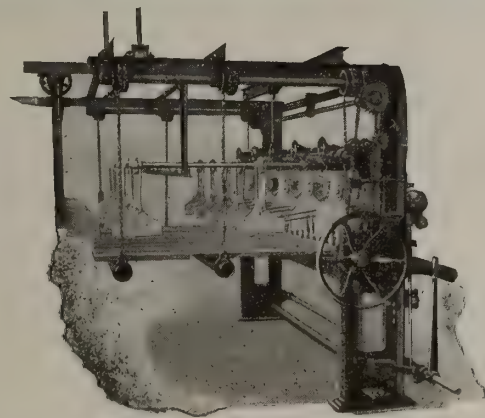
Make of cutter

Hand of cutter

Type of cutter.....

Name of mill

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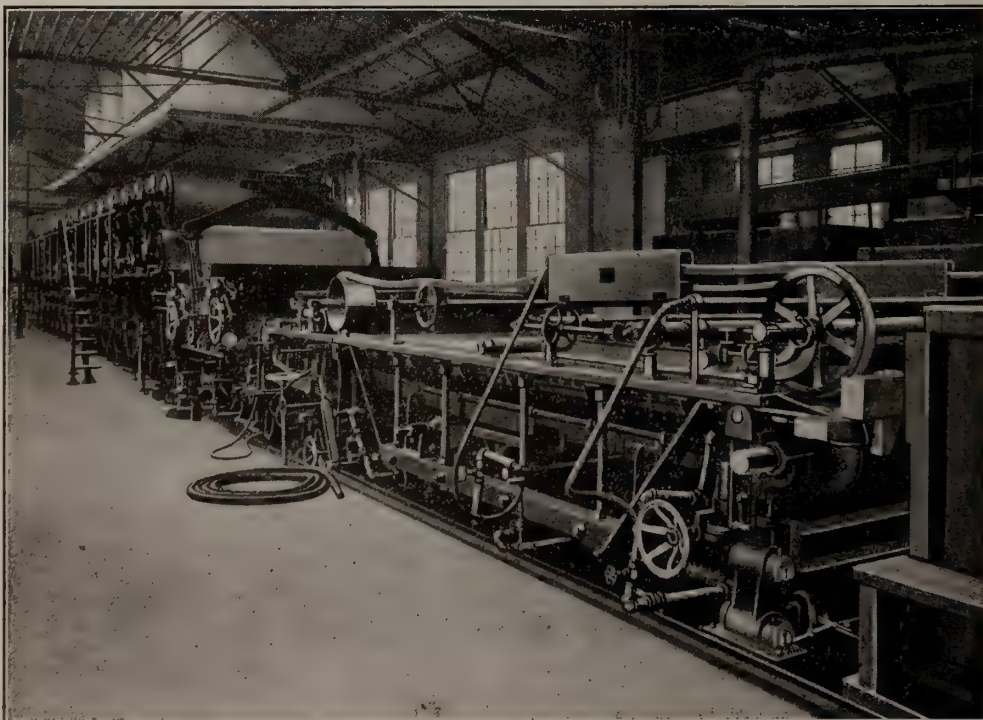
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*Sole Manufacturers of Machine Covered by
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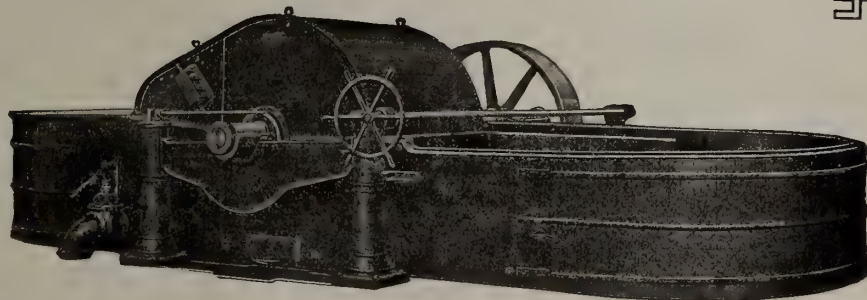
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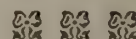
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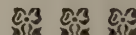
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Pulp and Paper Magazine

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Careful Development

Canada is upon the threshold of a very great development in the pulp and paper industry. There are several mills now building and several more which will be extended, one or two which will be converted; all of them will tend towards a greater production in the industry. The actual quantity is variously estimated at from seven hundred and fifty to twelve hundred tons per day. In five years' time the whole complexion of production in Canada will be changed.

The very nature of the pulp and paper industry necessitates its growth in cycles or swells. Even the youngest of our readers will remember the great expansion which took place four years ago, and will realize the comparative quiet which would have settled upon Canadian pulp and paper industry had it not been for the great demands which have been thrown upon it by the conditions surrounding the war. Now, sooner than might have been expected, comes another wave of expansion.

Building a pulp mill is not like erecting a shell factory. The money must be invested for a long time. The process is a long one, the technical difficulties are manifold. To shut down for any extended period is to pile up an indebtedness and cause depreciation in a valuable investment to an extent that can hardly be estimated.

It is very easy to believe that a mill will "pay for itself" in two or three years on the present market. It is very easy to think that Canada's export trade is going to develop to such an extent as to justify the erection of many mills in the country. Undoubtedly present tendencies towards expansion, should fill every pulp and paper manufacturer with satisfaction, but it must be borne in mind that present conditions will not always remain, that there has been an up-

heaval in the financial world on account of the war which has never occurred before. Our financing of to-day is on what might be termed a fictitious basis. The vast supplies of gold in the country will not remain. The prosperity which exists so far as actual buying and selling is concerned, is skin-deep, or probably "duration-of-the-war-deep."

The Pulp and Paper Magazine is not a pessimist. Its confidence in the future, and even the immediate future, of the industry, is to be seen in its decision to double the number of issues at the first of the coming year. There can be no denying the magnificent outlook for Canada's greatest manufacturing export industry. But we cannot refrain from expressing a word of caution against banking for the future on present-day conditions. To those groups of capitalists who know exactly what they are doing, we have nothing to say, but to those whose knowledge of the industry is confined principally to the existing prices of pulp and paper, and to the quotations of stocks of companies who have been "through the mill," we would counsel the most careful and circumspect action.

Unsteady financing has been the ruin of several pulp and paper companies who are now no more. Some mills to-day are still feeling the effects of a little spree with promoters. The industry is too important a factor in Canada's future to permit of it being a mere shell game. Sir George Foster, speaking before the Canadian Club in Montreal, recently said: "You are not going to make Canada prosperous by sitting in your office and running up the price of real estate. If there is one thing I would impress upon you, it is production, production and again production." This is an attitude which all healthy minded friends of the Canadian Pulp and Paper Industry will endorse. We want clean financing, sound development, and efficient manufacturing methods in every new project.

Prices Tending Upwards

An examination of the market quotations which appear elsewhere in this issue, reveals the fact that prices are steadily tending in an upward direction. Reports from the United States show that the International Paper Company and other large producers are charging 3c and upwards for newsprint. In Canada the higher prices being paid for coal, for copper wire, for felts and other paper-making supplies, to say nothing of the increase in wages paid labor, is having its effect on the cost of white paper.

The manufacturers are finding that they cannot afford to supply customers with paper at the rates which prevailed even a few months ago. They are seeking in vain to find some relief for the present situation, but are unable to find any. Neutral countries in Europe such as Norway and Sweden are faced with a shortage of coal and of other supplies, while shipping rates, insurance and trade embargoes make it almost impossible for those countries to relieve the situation on this side of the Atlantic. The result is that prices, both in Europe and here, are steadily tending in an upward direction, and the probabilities are that what looks like abnormal prices at the present time, will seem low when we look back on them six months hence.

Afforestation and Returned Soldiers

In previous issues of the Pulp and Paper Magazine we urged upon the Governments of the country — Federal and Provincial — the necessity of making definite plans for the employment of returned soldiers. One plan proposed was the building of a great national highway which would not only give employment to many thousands of men but would prove to be of the greatest economic value to the nation.

Another plan; one which comes directly home to the pulp, paper and lumber interests, is the engaging in afforestation on a wholesale scale. To-day one of the most serious problems confronting the people of this continent is connected with our supply of forest products.

Paper makers are worrying over an available supply of paper making woods, lumbermen see their forests depleted and moving farther back year by year while agriculture, dependent upon forests for the retaining of soil, shipping interests for the conservation of a water supply and a thousand and one other interests look to the forests for a solution of their particular problems.

For scores of years we have been burning off our forests, or allowing them to burn, at a rate that will mean their total destruction if permitted to continue

unchecked. The heavy and growing demands for lumber for building material and for paper making is seriously taxing the forestry resources of the country. Already experiments have been made in efforts to find substitutes for pulp making woods, not so much in an effort to replace wood, but as a desire to provide a suitable substitute when the supply of pulp wood becomes exhausted.

Paper men have invested tens of millions in plants and are vitally concerned that their supply of raw material and water power be conserved. A paper mill cannot be picked up bodily and carried a hundred or a thousand miles inland to a virgin forest. The forest must be at its door and if one be cut down or destroyed another must be grown to take its place.

In Canada comparatively few pulp and paper companies have seriously taken up the question of replanting their forest areas. This is a work which might well be taken up by them and through them the Governments of the country aroused to action. Practically every paper and lumber company in the country regards this as its most pressing problem.

In nearly all the belligerent countries movements are on foot to make a return to the land an easy and feasible undertaking and at the same time it is recognized that one of the best ways of doing this is by afforestation.

Recently a deputation from the Royal Scottish Arboricultural Society waited on the Scottish members of the British House of Commons to urge the creation of a separate department of forestry in connection with the Board of Agriculture for Scotland. Its members admitted that the great value of forestry had only been recognized during recent years, and they argued that now was the time to make it a national responsibility, especially in view of the impending necessity of buying huge quantities of lumber to take the place of that destroyed during the war.

The argument was put forward that the great question of securing employment for the multitude of discharged soldiers which will fill the labor market at the end of the war is being very generally discussed; the value of such schemes makes a practical and immediate appeal to many. Afforestation is, in fact, as Lord Lovat, one of the spokesmen of the deputation, maintained, one of the cheapest ways of settling people on the land, at any rate in the Highlands. It would be possible to put one man on the land for every 100 acres planted, and later one man to every 25 or 50 acres. He thought, moreover, there were certainly not less than 2,000,000 acres in the Highlands alone, suitable for forestry. Every man settled in these Highland glens in connection with afforestation would be a definite addition to the population and would displace no one.

If such a plan would help Scotland would it not also help Canada?

Wood Alcohol to Replace Gasoline

According to some of our chemists John D. Rockefeller is heading straight for the poor house while the over-worked and under-paid lumberman with heaps of sawdust littering up his yard will shortly be in the millionaire class. It is all due to the magician's wand which the chemists wave — only in their case its a test tube. As a result of years of testing and experimenting it is now claimed that a fuel made from alcohol will shortly replace gasoline.

Such well known chemists as Arthur D. Little and Arthur H. Comey, head of the laboratory of the du Pont Powder Company, vouch for the commercial success of wood alcohol made from sawdust.

Mr. Little says, "there no longer is a question of the commercial success in the manufacture of alcohol for automobiles. It can be made, it has been demonstrated, from wood waste, from waste sulphite liquor and from molasses for as low as 25 cents a gallon and at that price it undoubtedly will be preferable to gasoline. It is cleaner than gasoline, will not explode or catch fire and will develop practically as much power."

Mr. Comey says, "the manufacture of alcohol from sawdust is a commercial success."

To anyone who has been around the lumber mills of the country and knows what a nuisance sawdust was considered this is startling. In some instances the mill men have tried to use the stuff in place of coal or wood to make steam with which to run their machinery, but not a few had aerial carriers by which the sawdust was carried a considerable distance and fed to fires that burned week in and week out, night and day.

To these men sawdust was as much of a problem to get rid of as surplus cotton seed once was to the cotton men.

And now sawdust may rival cotton seed in utility if not in value.

As the chemists explain the process by which alcohol is made from sawdust it is something like this: The cellulose in sawdust is extracted. Cellulose is the substance that forms the walls of vegetable cells and consists of carbon, hydrogen and oxygen. This is made to ferment and out of the fermentation comes alcohol.

Theoretically, if not commercially, the same thing can be done with all the weeds, all the grasses, any or every form of plant life. The marsh and the desert can be made to yield power to drive machinery.

To-day, in the South, alcohol is being made from yellow pine sawdust and after that process is ended the residue is made into a food for cattle. In one es-

tablishment 2,500 gallons of alcohol are being produced daily. The cost of production is said to be lower than that of making alcohol from corn.

The chemist who can convert the waste or by-products of our forests into valuable commercial products will confer a lasting benefit upon the nation.

TECHNICAL SECTION MEETING NOVEMBER 24TH AND 25TH.

Doctor J. S. Bates, Chairman of the Technical Section of the Canadian Pulp & Paper Association, announces that arrangements for the meeting of the Section to be held on November 24th and 25th are rapidly approaching completion.

It has been decided to hold the meeting in the Vice-Regal Suite of the Ritz-Carlton Hotel, and arrangements will be made for the members to have luncheon and dinner as a party. Since the last announcement was made in these columns, it has been decided to hold the meeting on Saturday morning, 25th November, as well as on Friday, the 24th.

Five papers from experts have been arranged for as follows: Mr. Ellwood Wilson, will speak upon "Forestry in connection with Pulp Mill operation"; Mr. R. B. Wolf, of the Burgess-Sulphite Fiber Co., of Berlin, N. H., will speak upon, "Mill Efficiency"; Mr. H. Guettler, of the American Barking Drum Corporation, "The American Barking Drum"; Mr. O. F. Bryant, of the Forest Products Laboratories of Canada, "Pulp Wood Measurements and Some Factors Involved in Shipping and Baling of Pulpwood"; Mr. Olivier Rolland, "Notes on some European Institutions Connected with the Paper Industry". There will also be a discussion on the Pulpwood situation, and upon efficiency in handling Pulpwood.

These papers in conjunction with the very interesting discussions which will be held in connection with the business which comes before the meeting, and with other topics which will be brought up for general discussion, will provide one of instructive and entertaining programs which has been held for some time.

Full notices of the meeting are being sent out to Members by the Secretary of the Technical Section. All those who can possibly arrange to do so are urged to attend. There is an intellectual feast in store for every member of the Section who comes.

EXPORTS OF NEWS PRINT PAPER.

The following is a comparison of exports of news print from the United States for the first eight months of 1914, 1915 and 1916:

	1914 Tons	1915 Tons	1916 Tons
January	2,294	5,104	4,565
February	3,402	3,239	6,158
March	3,480	4,118	5,264
April	6,884	4,202	4,843
May	3,042	2,199	6,071
June	6,015	6,797	7,300
July	4,510	3,467	7,458
August	5,794	4,182	10,394
Totals	35,421	33,308	52,053

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AFFORESTATION.

(Ottawa Citizen.)

National afforestation is under consideration in the United Kingdom for the settlement of returned soldiers after the war. The importance of afforestation was recently discussed in a British weekly, *Nature*, devoted to natural science. Sir W. Schlich, writing in the *Quarterly Journal of Forestry*, says, of a possible British plan:

"As most forest work is done in winter, when agricultural work is slack, a scheme of afforestation will provide extra labor for agriculture in spring and summer, and consequently will be a considerable help to increase productivity of the land generally. This point is of especial importance in connection with small holdings, and should be taken into account when considering schemes for the settlement of discharged soldiers after the war. Very large continuous forest tracts are not necessary. Small blocks of woodland, with a minimum area of 500 acres, scattered over the country in the vicinity of small holdings, make an ideal combination."

Afforestation in the settled parts of Canada should be possible on an extensive scale. It would perhaps help to regulate the run-off of water from the hill-sides, reducing the excessive floods of spring and the parching of the land in autumn. Ottawa valley and the district around could probably absorb several thousands of discharged soldiers in settlements for afforestation federal or provincial organization.

NEW WAYS OF MAKING PAPER.

That satisfactory wood pulp can be made from a number of heretofore little known woods is evidenced by a recent United States Government publication, which contains seventy samples of paper manufactured by different processes, chiefly from woods heretofore practically unused for this purpose.

The bulletin goes on to say that the method of manufacturing groundwood pulp has changed very little since its introduction into this country in 1867. It was with the idea of developing new methods and improving the old that tests were undertaken at the Forest Service laboratories at Wausau and Madison, Wisconsin. As a result, the relation of the different steps in the manufacturing process to each other has been definitely established and the merits of each treatment determined. The paper made from new woods was given a practical tryout by two large newspapers with satisfactory results.

The tests showed that eleven new woods give promise of being suitable for the production of newsprint paper, while a number of others will produce manila paper and boxboards. Most of these woods are confined to the West, while the groundwood industry now obtains the bulk of its raw material from the East.

The F. N. Burt Co., Toronto, Ont., have removed their head offices from 53 King St. West to the Royal Bank Building, 6 King Street East.

Practical Operation of the Modern Boiler Room

By HENRY BERT

(Specially Written for Pulp and Paper Magazine)

The mental picture which is portrayed to the mind of the average individual when the boiler room is the subject under discussion is one of a mass of towering iron and steel, brick work, pipes, roaring furnaces, hissing steam and quantities of coal, all performing to produce the little giant by whose invisible power the wheels of the industry are turned.

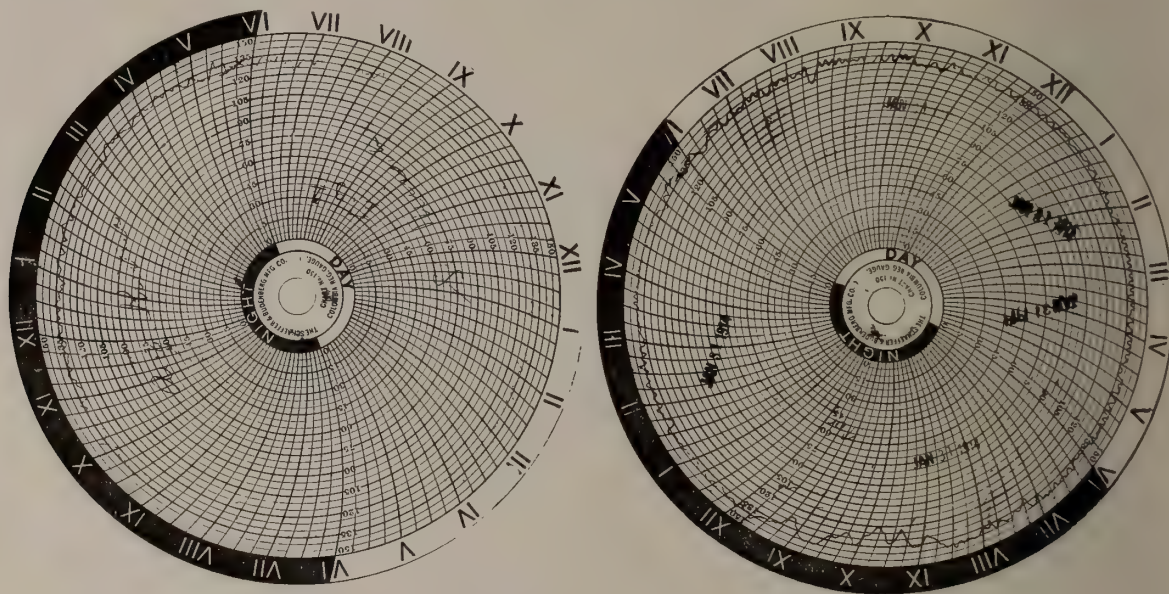
Seldom, if ever, is there shown upon the screen the presence of the man behind the scoop, the fireman, who is the ring master of the whole performance.

The boilers which compose the mass of steel and iron may be the last word of the builder as regards efficiency and practical and economic operation, their settings and enclosures may be everything that could be desired; the piping adequate and of highest standard; the furnaces may be constructed along the lines of latest and most improved capability for the burning of the fuel; the drafts of proper regulation; the coal may be the very best article to be obtained as

highest efficiency but there responsibility ceases and at once attaches to the owner or his executive force to secure the fireman and make it an object for him to learn to do his part of the work with the utmost care. Any fireman who has to work hard to keep up steam under ordinary conditions is a poor asset to the boiler room. By the use of brains and less of the shovel, poker and slash bar, all the heat units of the coal will be gotten out of the fuel, the residue in the ash pit is white and the expense of maintaining a coke oven is done away with.

The reader will probably say "ideal conditions surely, but how are they arrived at and what assurance may be had that once such conditions are present, their continuance is a certainty?"

Most modern boiler rooms of this day are equipped with many delicate and sensitive recording instruments and although they may represent the outlay of some hundreds of dollars, the instrument is certain to return large dividends on the capital invested. These



Figs. 1 and 8.

regards heat units and adaptability, but for the successful operation of all this equipment the man behind the scoop must provide the brains.

Boilers and fuel and water may and will produce steam but boilers, fuel and water combined with brains will produce steam in an economical way and of regular and dependable quantity and pressure.

It is therefore necessary and very essential that the fireman be of the highest standard of intelligence as is possible to secure and that the wages paid be sufficient to attract and hold an intelligent class of men to this line of work. For a large and expensive installation of boiler room equipment a fireman of sufficient experience to be considered trustworthy and safe should be employed.

The technical and practical knowledge of the manufacturers will enable them to build boilers of the very

instruments not only tell to the superintendent the story of the fireman's performance, but are also a guide and instructor to the fireman who has a sufficient amount of intelligence to display a conscientiousness in his work and a desire to become a proficient and therefore valuable and trusted employee.

The instruments referred to are the CO₂ recorder, draft recorder, smoke recorder and 24 hour recording steam chart.

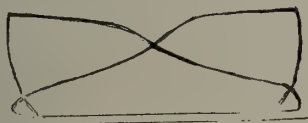
Records taken from a boiler room that is modern in every way and is handled by intelligent firemen, are next submitted.

Fig. 1 shows a 24 hour steam chart one-half of which is white, the other half being black, representing the day and night runs respectively. The pressure shown on this record is about 130 pounds, the boiler blow off being set at 140 pounds. The variation of the pressure

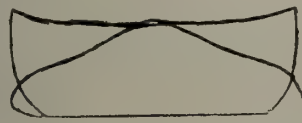
shows a minimum pressure of 125 pounds, and a maximum pressure of 135 pounds, or a variation of about seven and one-half per cent.

Indicator Cards from Engine. Fig. 2.

Fig. 2 shows the indicator cards taken from engine at intervals of six hours. This shows the variation of the load carried by the engine during the twenty four hours run covered by the steam chart record referred to in Fig. 1. The variation of the load is about 20 per



Card No. 1, taken November 20, 1914; at 12.30 a.m. Which engine Beater; boiler pressure 135 lbs. gage. Pres. in receiver 10. Revs. per minute, 90; Scale, 80; Piston diameter, 42; Piston Stroke, 630; Engine constant, 11.75; M. E. P., 78; I. H. P., 916.5.



Card No. 2, taken November 20, 1914, at 8.45 a.m. Which engine Beater; boiler pressure 35 lbs. page; Pres. in receiver 10; Revs. per minute, 90; scale, 80; piston diameter, 28; piston stroke, 42; piston speed, 630; engine constant, 11.75; M. E. P., 86; I. H. P., 1010.50.

cent., while the variation of the steam pressure is but seven and one-half per cent. The face of the cards will show the different expansion lines of the several loads, while the back of the cards will show the readings of the cards.

Fig. 4. Smoke Records.

Fig. 4 shows the smoke records. Each small square shows a two minute record, which is divided into one minute records by the small line in the center of the square. The records in the square above the small dividing line shows the first half hour and the records below the small dividing lines shows the record of each

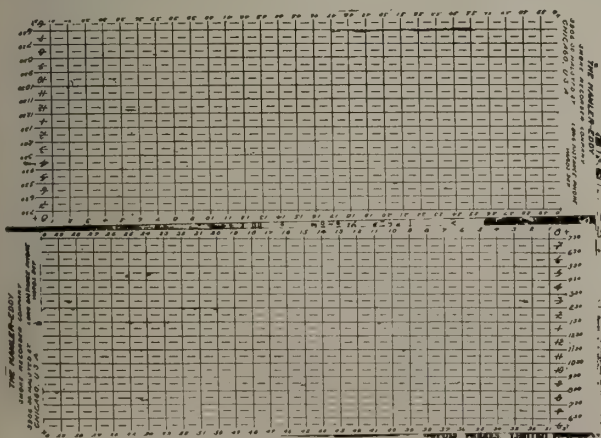


Fig. 4.

minute of the last half of the hour. These records show a dark spot in some of the small squares which indicates just how dark the smoke was at the top of the smoke stack at that particular time.

The smoke records herewith submitted are as nearly perfect as any that have come under the observation of the writer. This record together with those of the CO₂ recorder, draft regulator and steam chart, indicate beyond a doubt that the fireman was on the job and that all of the B. T. U. of the coal was available for heating purposes. This will support the position previously taken that it is economy to employ intelligent firemen even at an advance in wages.

Records will now be shown indicating the contrary conditions where an unskilled fireman was in charge. An examination of the two sets of records will show that the load was not as heavy for the unskilled fireman as for the competent man and that it was also more uniform and regular.

It will be noted that the variation between the maximum and minimum load is but four and one-half per cent. which is the usual amount of variation during a consistent run.

Figure 8 shows a very large drop on the CO₂ chart. This means, of course, a loss in combustion. Now the question arises what is the cause of this difference? By examining the smoke records which are herewith shown in Fig. 4, it will be noted dark lines and spots which indicates that large volumes of dense black smoke have been given off at the stack. This indicates that the gasses have escaped through the stack before being burned and is, therefore, a lessened efficiency of the fuel and a financial loss. Also a serious handicap in the production as when the steam is up and down the paper will run heavy or light, wet or dry, as the case may be.

NORTH AMERICAN PAPER CO.

The securities of the North American Paper Company have been admitted to trading privileges in the unlisted departments of the Montreal and Toronto stock exchanges. The company assumed its present form about eighteen months ago, when a United States banking syndicate, headed by Chandler & Co., of Philadelphia, floated a voluntary trust under the laws of Massachusetts as a holding company for the Chicoutimi Pulp Company, the St. Lawrence Pulp & Lumber Co., and the Tidewater Paper Mills Company of Brooklyn. In addition the North American owns the control of the Roberval & Saguenay Railroad, the Saguenay Light & Power Co., and other enterprises subsidiary to its pulp and paper business. When the promotion was completed there were underlying bonds out aggregating \$7,299,500, in addition to \$2,000,000 of 6 per cent. preferred stock and \$1,000,000 common shares of no par value. Since then the enterprise has been considerably enlarged owing to the improvement in the paper trade, and the sulphite mills of the St. Lawrence mill at Chandler, Quebec, which was originally designed to produce 125 tons a day, are being doubled. To finance this extension the company sold 220,000 shares of the common stock in Toronto, and in New York, and it is this stock which is being traded in at present. It is said that Mr. C. S. Wilcox of Hamilton, Senator Wilson of Montreal, and another prominent Canadian will join the board, which is at present made up almost entirely of Americans including Senator Oliver of Pittsburgh, P. W. Herrick of Cleveland and W. H. Clark of Philadelphia. Of the total authorized issue of 1,000,000 shares, some 440,000 are outstanding. When the company was formed it was estimated by the promoter that it would earn in 1917 \$1,245,000, after interest charges.

Water Power of the Maritime Provinces

In a brief introductory chapter, suggestive of the romantic and historic interest which surrounds the Maritime Provinces and also of their advantages from a pleasure seeker's standpoint, both of which are well-known, attention is called to the fact that these provinces have as well, abundant natural resources of great commercial value, including water powers.

The outstanding physical features of these provinces are next briefly outlined showing how the disadvantage of small river systems is largely overcome the water power standpoint by relatively large precipitation and many excellent facilities for storing water. Some of the most promising fields for the utilization of electrical energy in this district are discussed at

It is stated that, taking the Maritime Provinces as a whole there is believed to be about 34,500 H.P. developed to date, by far the greatest part of which is utilized in the pulp and paper and lumber industries. There are in all about twenty purely hydro-electric developments, ranging in installed capacity from 100 to 500 horse power, with one exception which has 3,800 horse power installed.

In connection with undeveloped water powers, only a few of the larger sites which have been examined to a greater or less extent are mentioned. In all, seven sites are discussed, with a total capacity so far as can be learned of 179,000 horse power. At the same time, it is pointed out that one of the greatest assets of the



Dam on Lequille River, Nova Scotia, for Annapolis Electric Light Plant.

considerable length with particular reference to the mining and farming industries.

In a chapter dealing with the sources of information, it is shown that adequate water power data for this part of the Dominion is rather meager, but at the same time, it is pointed out that the Nova Scotia Government has lately taken measures to secure more adequate data with a view to facilitating all legitimate development of the latent power possibilities of the province.

Maritime Provinces, from a water power standpoint, lies in the large number of comparatively small sites readily available for local or domestic use.

The main points brought out in the pamphlet are as follows:

(1) There are in the Maritime Provinces as a whole, about twenty strictly hydro-electric developments with installed capacities from 100 to 200 horse power, except in one instance where 3,800 horse power is installed.



Nictaux Falls, Nova Scotia.



Hydro-Electric Plant Operating Gold Mine, Isaac Harbour, N. S.

(2) The total water power developed is believed to be about 34,500 horse power, the greater part of which is used in connection with pulp mills and saw mills.

(3) Data is not at hand to make an adequate estimate of the total amount of water power available, though a few of the larger sites, with a total estimated capacity of about 180,000 horse power, have been investigated. These sites are all advantageously situated with reference to excellent tidewater harbours.

(4) The greatest water power asset of this part of the Dominion consists in the abundance of relatively small sites in almost every part of the country, which can easily be made available for all local purposes.

(5) The legislative authorities in at least one of the Maritime Provinces are taking measures to facilitate all legitimate development.



Pulp Mill, Magaguadavic River, N. B.



Power Plant on the Aroostook River, N. B.

PENNSYLVANIA FOREST FIRES.

The forest fire statistics of Pennsylvania show that in 1915 the losses total up to \$850,000. Some 42,000 acres of States forest and 295,000 acres of private forest were burned over, and \$32,000 was spent in extinguishing fires. Railroads are still the largest single cause—an almost entirely avoidable cause as has been shown in many countries.

USES OF CREOSOTE.

A new idea is to paint farm buildings and similar structures with creosote. It can be easily applied, is absorbed by the wood and becomes permanent and serves both as a paint and a preservative. The same idea may be applied to garages and similar small structures around city and suburban homes.

Greed of Publishers is Aggravating the Situation.

(Written Especially for The Pulp and Paper Magazine
by R. W. JOLLY.)

New York, N.Y., October 31, 1916.

The action of the American Newspaper Publishers' Association, in appointing A. Gordon McIntyre, former editor of the Pulp and Paper Magazine, to take charge of the newsprint problems of that organization, is indicative of the fact that the publishers are actually awake to the dire seriousness of the present situation. To one in the trade, it seems ridiculous that it should have taken so long a time for this fact to become known, but that it is a fact cannot be doubted for it is made apparent by the very actions of the publishers. However, despite this precaution and despite the many other means which it is claimed are being adopted to reduce the consumption of paper, we are no more nearer the actual solution of the problem at this stage than we were a few months ago. The fact is that conditions are more acute than they have ever been.

Your correspondent has interviewed a number of the leading factors in the newsprint industry to "sound" out the general sentiment and to try to discover what were the opinions of some of the important characters. The writer was somewhat dumbfounded to hear the following expression from one of the largest manufacturers in the United States:

"To my mind, the key to the situation is the selfishness of the large publishers. While they have been preaching the gospel of reducing the consumption of paper and while they have been publishing statistics showing to what extent they were aiding in this direction, they have not given the full co-operation which is not only desirable but is absolutely necessary. It is true that most of the large newspapers have eliminated the return privileges entirely — although I happen to know of a few who have not done so — and it is also true that, by this means and by various other small schemes, such as refusing to give extra copies to advertisers, employees, etc., considerable saving of paper results. But this saving is of little consequence when one considers the many extra pages which many of the larger papers are now carrying.

"It must be borne in mind that we are now passing through one of the most prosperous periods which the country has ever experienced. Lots of money is in circulation and it is in circulation among people who, ordinarily are not in a position to spend a great deal. To-day, the munitions concerns are paying high wages to unskilled help, with the result that mail order houses of every description, department stores and other such concerns are advertising heavily. Luxuries which the laborer could not think of before, are now within his reach and he is being exploited from every side. Household adornments, pianos and other musical instruments, clothing, all of these are being advertised heavily. We refer especially to female attire of every description. Never in the history of the country was so much money spent on women's dress as is being spent to-day. It is known that girls earning comparatively little spend as much on silk garments as do the more well-to-do.

"These are some of the reasons why advertising is so voluminous and, to my way of analyzing, it will continue for a few years more. This, of course, means that the publishers will continue to have before them this temptation. I call it a temptation for it is a means of revenue to newspapers, which they should handle carefully, and with consideration to the smaller publishers.

"It might be possible, if some scheme was arranged whereby advertisers would have to cut down the space they are now using, so as to allow the publisher to reduce his consumption of paper, it might help matters considerably. But there is no such attitude among the larger concerns, according to my observation. I refer in particular to some of the large New York daily papers, which are to-day running more pages than they ran before the scarcity of paper became apparent. They simply can't resist the temptation. It means money, and money is to be considered before the welfare of the trade. What little they save in eliminating "returns" and other such similar stunts, they consume, and more, with the heavy editions they are now printing. It is true that one publisher has printed on his first page the announcement that the papers' advertising would be limited — but that is only one case. There may be a few others, but I haven't heard of them.

"You speak of the scarcity of paper. Yes, but you would never think that such a thing were true, if you say some of the special editions which I know have been gotten out during the past month by a few large manufacturers. What I speak of is this. One paper which generally contains about 20 to 30 pages, celebrated an anniversary by appearing in 100 page form, together with a magazine insert. This is what some of the publishers call reducing the consumption of paper.

"I don't know what will happen to the little fellow if the big ones don't hurry up and show some consideration. Most of the large publishers have contracts to hold them over for some time and have not immediate worry. I know of a god many who could well allow some of their shipments to go to others who need it more. But they not only are exacting, but they are becoming greedy and are trying to store up whatever is in sight. They are scouring the market, buying from jobbers and from any source where newsprint is available. The result is that the smaller fellow finds himself facing a situation which means the life or death of his enterprise.

"At the present time, the only really feasible scheme is the pro rate plan which has been suggested by the manufacturers but which has not yet been adopted by the publishers. I have considerable confidence that the appointment of Mr. McIntyre will mean a good deal toward the relieving of the situation, but at this moment, this means but little."

Mr. McIntyre discussed the situation as follows: "The duration of the war enters into the problem, of course. If hostilities cease within a year exports from Scandinavian countries may be resumed in volume and the pressure upon the publishers relieved. If the war

keeps up and the foreign supply of raw materials is kept down then the shortage will be greater than ever before, whether the publisher economizes in paper or not. The American mills are faced with the demand for more paper than they can supply at present. When asked why they didn't foresee that more white print would be needed, the manufacturers are wont to say that the domestic supply in the past has been held down by injurious legislation.

explain why, if the war munitions factories have expanded and additional machinery installed the paper mills have not been developed in proportion to the increased demand for their products. While this argument is going on the supply of paper is shrinking and publishers are hard put to it to find the necessary rolls. The largest annual consumption of newsprint reported to the American Newspaper Publishers' Association is 35,000 tons, although the figure would be higher if special issues were put out.

"Most of the mill owners realize that excessive prices will wipe out the smaller customers by the score, especially in the rural districts, and they are moderate in their demands, but the A. N. P. A. officials believe there are other manufacturers who are seeking all the traffic will bear, regardless of future developments.

"In behalf of the manufacturers, it is pointed out that little new production is provided for because of the cost of installing new machinery, not to mention the fact that it takes approximately two years to develop water power for a new plant. Whatever the reasons for the shortage, and the producers and consumers will advance hundreds of conflicting reasons, the supply is dwindling and publishers are cutting down their papers."

Just what can be done is still the problem. The Federal Trade Commission, in its investigations, has made several recommendations, but none of them have met with the approval of the newsprint manufacturers. The concerns in the Watertown district made a protest when the Commission suggested a pro rata scheme for the purpose of producing an accumulation.

Regarding the suggestions that the mills run on Sundays, in order to try to get the production up a little, this has been shown impractical for many reasons. In the first place, the machines will not stand the wear. As it is the men really work seven days a week, for many come down to repair the machinery and put it in good shape on Sunday. The Federal Trade Commission suggested that some of the mills on wrapping and specialties place newsprint on their machines. But this was considered absurd, for there is good money in these articles, much more than can be made in newsprint and it would be ridiculous to give up what is now regarded as a mint to enter into the news game on a larger plane.

THE FARM WOODLOT.

In the six New England States thirty per cent of the entire region is embraced in woodlots owned by farmers, a total of 11,500,000 acres, fully one-third of which is covered with worthless scrub, while of the remainder hardly 2 per cent. is intelligently managed to produce trees. Yet this area is practically all absolute forest soil by reason of its steepness and rocky character. Much of it was once cleared for pasture, and is now reverting to forest.

Paper Men Before Royal Commission.

Pulp and paper representatives appeared before the Dominion Royal Commission this week and gave some valuable information regarding the present and future status of the industry. The first gentleman called was Mr. Carl Riordon, the vice-president and general manager of the Riordon Pulp and Paper Company. Mr. Riordon told the Commission of the growth of the pulp industry in Canada, and of the distribution of the output of his firm. Out of a total of 60,000 tons per annum, 15,000 tons shipped to Canadian concerns, 35,000 tons went to the United States, and the remainder, 10,000 tons, to England. Mr. Riordon explained how the long haul to Europe, with its consequent high freight rates, made it almost impossible for Canadian manufacturers to compete with the manufacturers of pulp in Europe, who are located principally in Sweden and Norway. He stated, however, that when the war was over and conditions had again gone back to what was looked on as a normal basis that it was expected that with the higher taxes that would prevail in Europe the higher cost of production, and the higher cost of capital, that the price of the European pulp would increase materially, with the result that the Canadian manufacturer might, despite the high freight rates, find a new field for his output. From his standpoint Mr. Riordon stated the future was bright for this line of business.

Pulp Supply Vanishing.

Mr. Ellwood Wilson, of the Laurentide Company, and a recognized expert on all matters dealing with Canadian forests, was the next gentleman called. Mr. Wilson rather startled the Commission by stating that if strict measures of conservation and reforestation were not adopted immediately on this continent that within the next twenty-five years the pulp supply of Canada would practically have disappeared. Mr. Wilson stated that three things were essential to the protection of the industry in this country; one was the adoption of a scientific scheme of reforestation; another a proper system of fire protection, such as had been adopted in British Columbia and on the land under the control of the Laurentide interests on the Ottawa and St. Maurice rivers, and also a system that would do away with the dangerous disposal of waste that now prevails in the forests throughout Canada.

Mr. Wilson stated that during the past thirty-five years thirty per cent. of the wood pulp of Canada had been burned over and rendered useless for generations to come. Since 1908 when fire protection was first introduced on a scientific basis the decrease in waste has been most marked.

TO DEVELOP EXPORT TRADE.

Attention is drawn to the advertisement appearing on another page of this issue of a well-known paper concern which desires more capital in order to develop their export trade. We understand preliminary details for their export business have all been arranged and that their auditor's statement for the past year shows a very high percentage of profit. Export business at the present time offers unusual opportunities and this should offer a profitable opportunity for someone.

DIGEST OF THE PAPER, CHEMICAL & MECHANICAL PULP MARKETS OF THE WORLD.

News-print Manufacturers' Association.

The World markets for paper and pulp continue quiet and firm. There is very little trading, as stocks are at low ebb and practically all production has been disposed of. English buyers are living from hand to mouth, hoping for a slump in prices, but the Scandinavian countries can dispose of any small lots which they have to offer in Germany, Trans-Atlantic and South European countries at advantageous prices, and are holding prices firm. Production during the past month has shown a slight decrease on both sides of the water. Most quotations made during September were nominal ones.

Spain.

In spite of the fact that imports of pulp from Sweden and Norway have increased, the news-print paper situation in Spain is still very serious, many newspapers, states that "World's Paper Trade Review" (London) losing as much money in a month as they previously earned in a year. This is due to the fact that the paper mills in Spain manufacture principally cigarette paper, tissue paper, fruit wrapper, letter paper, etc., and the presses of the country are almost entirely dependant on foreign paper for their supply.

According to the "Paper Makers Monthly Journal" (London) a very ingenious arrangement to meet the increase in the price of paper, and at the same time keep alive industries depending upon this commodity, has been adopted by the Spanish Government. As the newspapers of Spain were unable to agree to an increase of price ranging from \$8.75 to \$17.51 per short ton, the Government decided to purchase at present market prices the 15,432 short tons which the Spanish press consumes yearly, and to sell it to the newspapers at the prices which prevailed before 1914. When the war is over and the market becomes normal, the Government, in order to make up the loss, will establish a special tax on paper until the deficit shall have been repaid to the Treasury.

Italy.

An Industrial Commission has been appointed in Italy to investigate the paper industry, which has made the following proposals:

- a.—That a rule be established, by which the basis of a price for news-print paper can be determined by means of a stipulation to be agreed upon by representatives of the manufacturers and publishers.
- b.—A division of the classes of paper, and price regulation of each class.
- c.—Furnishing coal and cellulose by the State at cost price.
- d.—Arrangement by the State for transportation.
- e.—The State to regulate the Country's supply of paper by embargo and license.
- f.—The State keep the paper manufacturers from combining for control of the output.

According to the "World's Paper Trade Review" (London) the Italian paper makers have fixed a price on news-print paper during the three months ending with October at an average of \$148.82 per short ton, and for reamed paper \$8.75 less. This is an increase of about \$35.00 a ton over the price quoted in June.

Australia and New Zealand.

The paper shortage in Australia shows no signs as yet of letting up. Freight rates show no decrease, but the Newspaper Proprietors Associations have husbanded and apportioned all stocks, and all papers have been able to keep running. The Interstate Commerce Commission has investigated the possibility of manufacturing paper from native trees, but the industry was not found feasible for the manufacture of news-print paper.

Japan.

According to "Commerce Reports" (Washington) the "World's Paper Trade Review" (London) and other English trade journals, the paper business in Japan is increasing by leaps and bounds. Japan is now supplying China, India, and the other Oriental Countries, which originally obtained their supplies from Europe, and the Japanese pulp production alone has increased to more than 150,000 tons a year. Many new pulp and paper mills are projected, including a Government mill under the supervision of the Finance Minister and the Government has instructed every local Governor to report accurately on all trades in his jurisdiction. Recent orders for paper have been received to the extent of 12,500 tons, chiefly from Australia, Russia, and the South Seas, and the masters of the industry are making every endeavor to secure the entire Russian market, which was formerly occupied by Germany. The Government has given strong protection to the paper and pulp industry.

Germany.

According to a report from "Svensk Pappers Tidning" (Stockholm), the German Government has contracted with the A/B Ethyl for the building of 14 sulphite alcohol mills in Germany to begin operation in December, to take care of the demand from the armies for motor fuel. This will undoubtedly have an effect on the production of pulp and paper.

The United States Consul-General at Berlin reports on the German paper industry as follows:

"With the cessation of Germany's importation of cotton and other fibres upon the outbreak of the war, the demand for wood pulp and cellulose for the manufacture of explosives greatly increased, and consequently the supply of pulp available for the manufacture of paper was much smaller than usual. Wood imports from Russia and other belligerent countries have stopped, thus making the situation in the German market more difficult. The Swedish products have also had an adverse effect upon the production of paper in Germany.

"Permits to cut down large portions of the local forests and to utilize wooded sections of the occupied territory in Russian Poland have been issued, but these have proved insufficient to satisfy the existing demand. Conditions had become so serious in the German paper market during the early part of 1916 that a prohibition against the export of practically all paper from Germany was introduced on April 27th last.

"Besides the scarcity of wood and cellulose, which affected paper making generally, the dearth of wax, fats, and oils in Germany has especially hindered the

production of glassine, and grease-proofed paper, and the supplies on hand at the various factories have been growing smaller and smaller until now large quantities cannot be obtained at any price. Berlin retail houses can only refer inquirers to the manufacturers, and the manufacturers themselves will only guarantee to furnish small amounts at prices 100 per cent. to 300 per cent. higher than those of normal times. If the present conditions continue for another year no genuine glassine paper can be purchased here. Substitutes are being used more and more, but they are generally of admittedly inferior quality.

"The manufacture of glassine paper did not cease all at once upon the outbreak of the present war. The production became gradually less as the scarcity of raw materials became more evident. Three months after the outbreak of the war factories began one by one to close their doors. The calls upon Germany by its allies for paper of all kinds, especially grease-proof and printing paper, have been so heavy that the Government was asked to protect the interests of domestic consumers. By limiting the export and instituting economic measures, the situation was alleviated, "Old and used paper was systematically collected. In Berlin alone there are 450 receiving offices where supplies of used paper are collected. The total number of receiving offices in the Kingdom of Prussia is about 2,000. School children are the best collectors, and contribute vast amounts of old paper to the depositories. The paper is then sorted and sent to the mills, where it is reduced to pulp, and used again. Iron rings are offered as rewards for large contributions.

"As already stated, if the war lasts another year, there is reason to suppose that genuine glassine paper cannot be obtained in Germany at any price, for the old supply will then be entirely exhausted. Although plans are now being made for resuming manufacture upon the conclusion of peace, these plans must of necessity, be more or less vague. The machinery and spare parts can be collected and placed ready for use, but raw materials and the proper kind of labor cannot be obtained until some months after the cessation of hostilities. It is even intimated in some quarters that for a time Germany may be an importer of grease-proof paper rather than an exporter."

Finland.

According to the financial correspondent of the "Paper Maker and British Paper Trade Journal" (London) the situation in Finland in the pulp and paper market has undergone no noteworthy change during the last month. Considering the somewhat restricted opportunities for trade, the position is fairly satisfactory, the demand from Russia being well maintained. The mills are making very good profits and further expansion of the industry can be expected.

Russia.

There has been no change in the situation in Russia since our last Digest.

England.

The prices of chemical and mechanical pulp in England are maintained at about the same level as last month, in the absence of surplus supplies. At the same time the demand is quiet, as English buyers seem to be holding back in anticipation of lower prices. The "World's Paper Trade Review" (London) quotes the following prices in Great Britain current exchange c. i. f. West Coast:

Sulphite bleached	\$217.25 at \$225.94
Sulphite easybleaching	195.53 at 208.56

Sulphite news or strong	156.42 at 165.11
Groundwood wet	34.76
Groundwood dry	43.45

Early in September there was a tendency to shade prices of paper in favor of the buyers, and there was actually a drop in printing and some miscellaneous grades, such as cream-laid writings, common browns, etc., but the general pulp situation seemed to strengthen all the markets before the decline got much under way. The unsold balance of pulp in Scandinavian mills has greatly decreased, and a change in the situation is hardly to be expected until after contracts are filled and further trading started up.

In this connection it is interesting to see steps that are being taken to further trade in paper and pulp between England and Canada. The Secretary to the Royal Commission on Paper and Wood Pulp has announced that arrangements have been made by the Admiralty to provide tonnage for the conveyance of wood pulp from Canada to the United Kingdom. It is rather strange to note that in spite of the regulation by license of imports of roll news, the decrease of the 1915 figures over 1913 and 1914 was less than 20 per cent. Newfoundland is fast increasing her output, practically all of which goes to England.

England has also been able to maintain her hold in the export markets to a large extent. August, 1916, exports of paper exceeded August, 1915, exports by over 160 per cent. The principal grades making up this increase were printings and writings. In regard to wrappings and packings, imports have increased enormously and exports decreased.

In spite of the fact that there is a shortage of chemical pulp in the United States, imports are registered weekly at British Ports from the United States. The same holds true of France, and it is quite generally known that all of these shipments originate in Sweden. The prices, too, fall below those offered by Norway for direct shipment.

The British paper maker is hardly as optimistic as he was a few months ago on the question of more friendly relations with Sweden. He fully believes that the discrimination against Great Britain in regard to pulp was for political reasons, and is up in arms over the English Government allowing the importation of Swedish paper to compete with his, while he is forced to pay the ruling market prices for his raw materials. The Paper Makers' Association of Great Britain and Ireland gave guarantees against the increase in prices of domestic paper, if the Swedish paper supplies were forbidden, but the Paper Commission has so far refused to alter the situation.

Sweden.

There have been rumors for some months that the Swedish manufacturers and exporters were following the example of France and most of the other countries, and combining to protect Swedish trade and develop foreign markets. The form that the combination has taken is not yet known, although it is stated at the Swedish Consulate in New York that the exporters' combination is, in all probability, distinct from Governmental control. From all account Sweden intends to extend her markets in the United States, and later among other neutrals, and South America in particular. In view of the great production of paper and pulp in Sweden, this combination will probably be a very interesting factor in the paper industry after the war.

According to "Affarsvarlden" (Stockholm) there is very little, if any, change of note in the Swedish pulp market. The output of all the mills has been practically disposed of, although when small lots of both mechanical and chemical pulp are offered, they find ready takers around \$47.48 to 48.62 per short ton for dry mechanical, and \$85.09 to \$92.39 per short ton for "news" sulphite, terms always f.o.b. cash. Occasionally lots of sulphite from the United States are offered at lower prices than the Swedish mills are asking, but have had no effect on the Swedish prices. Sulphate pulp from Sweden finds a brisk demand from Germany at \$102.11 to \$104.54 per short ton net f.o.b.

The mechanical pulp market, both wet and dry, is very favorable, and everything points to a tighter market in the fall with an accompanying rise in prices. The chemical pulp market is also quiet but firm.

Norway.

There is very little change in the pulp and paper markets in Norway. "Farmand Norsk Torretningebled" (Christiania) and "Farmand" (Christiania) state that there have been more inquiries for paper at the somewhat reduced level of prices which has been established, but that relying on the demand from the European countries where production has been materially curtailed and from the over-sea markets, the Norwegian paper makers are confident that there will soon be an improvement.

There is absolutely no new feature in the pulp markets. In Norway too the output has been practically disposed of, which, together with a slight drop in production owing to labor difficulties and the fulfilling of English import licenses, holds market quotations to nominal ones. What little stocks are on hand the mills are willing to hold, or dispose of to Italy at strong prices (around \$48.62 per short ton f.o.b. for dry mechanical and about \$145.00 for strong sulphite). Spain with her import duty removed, is bidding for moist mechanical, and freights have fallen off considerably, which tends to strengthen f.o.b. prices.

"Tidsskrift for Papirindustri" (Christiania) states that the market is so generally quiet and firm, and lacking in business, that they omit giving any quotation figures

INTERNATIONAL PAPER.

It is believed that the plan which the executive committee of International Paper have been considering for liquidation of the accrued dividends is coming close to completion. This plan will probably provide for the taking from surplus cash of about \$5,000,000 on account of the 33% of accrued dividends on the \$22,406,000 preferred. The actual total of accrued dividends is \$7,393,000. It is argued \$5,000,000 could be paid in cash, inasmuch as the company will have by December 1st a net working capital of about \$15,000,000, which is \$5,000,000 more than it requires for the easy conduct of its business.

In the event that this procedure is adopted the balance of the accrued dividends would likely be met by the issuance of additional preferred stock now in the treasury, say \$2,400,000.

Such a course would still leave the huge prospective profits of 1917 available for use in cutting down bonds and in putting the finishing touches on the company's financial rehabilitation.

It is understood that September net profits reached \$800,000. The August net was \$625,000 and for July \$400,000.

PRODUCTION AND SHIPMENT.

The last weekly letter of the News-Print Manufacturers Association on production and shipment was sent out from their office on September 16th, and no subsequent letter has been out, owing to the absence of the secretary from the office.

Since the last letter was sent out there has been very little change in the situation. In view of the high price of labor, coal, chemical and mechanical pulp, and wood pulp, it is quite evident that such advances in price will be asked on renewal of contracts for the year 1917, as would have been deemed unreasonable six months ago. The pulp wood situation in Canada is particularly menacing and ominous. Mills which were paying \$18.00 and \$26.00 a month with board to ordinary workmen in the woods last year are now competing with one another for an adequate supply of this sort, and are offering anywhere from \$55.00 to \$60.00 per month with board, and camps in many cases are not supplied with a full complement of men. There is every probability that the cost of pulp wood will advance very sharply this year as compared with the pulp wood costs of the past, but the chief source of worry will not be the high cost of pulp wood, but the possibility that the mills may not be able to secure a sufficient supply to provide for their requirements during the whole of the year 1917.

In our last weekly letter we submitted statistics showing the production and shipments for the week ending September 9th.

The report for the Western Territory for the past three weeks is as follows:

Week ending	Production	Shipments	Stocks
September 16	102.2%	104.7%	1323 tons
September 23	83.2%	83.4%	1376 tons
September 30	106.2%	107.6%	1181 tons

You will note the heavy decrease in production and shipments for the week ending September 23rd. This was largely caused by the labor trouble at one of the large Western mills, and by the fact that a number of the smaller mills were running on other grades of paper.

The report for the Canadian Territory for the past three weeks is as follows:

Week ending	Production	Shipments	Stocks
September 16	99.5%	105.4%	3090 tons
September 23	96.3%	100.8%	2405 tons
September 30	95.6%	90.9%	2852 tons

Mill stocks in the Western Territory decreased 313 tons in the past three weeks, and mill stocks in the Canadian Territory decreased 799 tons in the same period. This amounts to a total decrease in mill stocks in the two territories of 1,112 tons. This is perhaps as sensational a statement as has ever been sent out from this office, coming in the month of September.

Reports regarding the scarcity of ground wood pulp are coming into this office in largely increased volume, and the difficulty of the manufacturers of news-print paper are increasing as the year advances.

ANNUAL MEETINGS.

The annual meetings of the American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry, will be held at the Waldorf-Astoria, New York, February 6th, 7th and 8th, 1917.

A Valuable Report

The focussing of public attention in Canada upon the problem of strengthening our national organization through increased industrial and commercial efficiency lends special value and interest to the Seventh Annual Report of the Commission of Conservation, which has just been issued. The activities of this Commission, relating to the entire field of primary production, aim to secure greater efficiency in basic industry—in the development and utilization of Canada's natural resources.

The resume of the past year's work is notable primarily for the progress recorded in the constructive programme entered upon by the newly formed Town Planning branch, with respect to one of our greatest and most urgent national problems, viz., the proper use and development of land, particularly in urban areas. Town-planning legislation of an advanced character has been secured in several provinces and thorough investigation of housing conditions has also been undertaken with a view to the drafting of model housing laws. Rapid progress has been achieved in the promotion of independent civic organization throughout the Dominion for the purpose of securing more general and thorough study of public questions.

A second noteworthy feature is the attention devoted by the Commission to the reduction of the heavy economic handicap imposed upon Canada through her enormous annual fire losses. The Commission is engaged in a careful study of the causes, the extent and best methods of remedying this avoidable tax upon the country's resources.

The section of the report containing the results of an agricultural survey in four representative counties presents accurate and definite data regarding the deficiencies of Canada's chief industry and affords a valuable indication of the lines along which efforts to improve rural conditions, economic and social, should be directed.

Steady progress has been made by the Commission in the huge task of national stock-taking, the urgent necessity for which becomes daily more apparent. Recent experience has served to emphasize the need for accurate knowledge of the nature and extent of the Dominion's wealth in lands, forests, minerals, water-powers, fisheries and wild life, as a guidance to intelligent and permanent national expansion.

The report, which is bound in cloth, and well illustrated, constitutes an important addition to the literature on Canada's resources and the problems connected with their efficient administration and development.

Forest Fires and Paper Prices

(Farm and Dairy.)

Canadian publishers are facing a critical situation in the rapidly increasing prices demanded for white paper. If the rise in price to three cents a pound of news stock, on which the ordinary newspaper is printed, goes into effect, it will mean an added expense to the dailies and weeklies of Canada of over \$2,000,000

a year. Many of them have already increased their subscription rates to cover increased paper costs, and it is quite within the range of possibility that the one cent daily will become a thing of the past. Farm papers are being equally hard hit by these increases, and what will happen, unless the situation is relieved, is hard to predict.

One of the causes given by paper manufacturers for raising the price of their product is the increasing inaccessibility of pulp limits from the paper mills. In this connection the Canadian Forestry Association has a timely word to say regarding fire waste. It claims that forest fires have had far more to do with the destruction of near-at-hand bodies of pulp wood than the actual cut of logs. The fire which recently devastated some 1,200 square miles of territory in New Ontario destroyed large quantities of standing pulp timber. An instance is also cited of the loss by one company of 400,000 cords of pulp wood already piled in the mill yard. Such losses are almost wholly preventable by modern fire protection. Public opinion is coming rapidly to the point where it will demand that the fullest precautions be taken by governments, as the trustees of our timber resources, to prevent the needless loss of pulp timber from forest fires.

Waxine Paper

"Waxine Paper," which is a new product just being introduced by the "Process Engineers Limited," Montreal, Que., has a number of properties interesting to the paper manufacturer, as the process by which it is made provides for the production of a paper having somewhat similar characteristics to a waxed paper and can be made entirely on a paper machine without any subsequent treatment.

These engineers have succeeded in accomplishing what had been attempted before but which, it is said, has never been successfully carried out, viz., the introduction of sufficient wax into the composition of the paper during the process of manufacture, to give the product a waxy appearance in character, and, at the same time, not interfering with the working conditions in the mill nor the volume of production. These results are obtained by mixing with the paper stock certain aqueous solutions containing wax—the solutions being in such physical condition that the wax can be deposited uniformly throughout the fibrous mass, thus coating all of the paper fibers. The result is that paper made in this way obtains a much more waterproof character than can be imparted to it by solutions of rosin. Any definite amount of wax can be incorporated into the paper, but in all cases the amount of wax required in this process is much less than would be absorbed by any coating process.

The interstices of the paper are not filled with wax as they are when impregnation is carried out by waxing the surface, but each individual fiber is coated with wax and made water-repellant. These papers can be used to replace waxed paper for all purposes where merely waterproof conditions are required.

They would be suitable for containers or receptacles of any kind. One noticeable characteristic of these papers is that their bending and folding qualities are not reduced by the presence of the wax, which distinguishes them distinctly from a surface-coated wax paper.

HOWARD SMITH PURCHASES CRABTREE?

It is reported on the very best authority that the Howard Smith Paper Mills, of Montreal and Beauharnois have purchased the paper mill of Edwin Crabtree & Sons, Ltd., of Crabtree Mills, Que. The Crabtree mills have a capacity of 25 tons per day of news and wrappings, but one of the plans of the purchaser is to enlarge the mill and secure a greatly increased output. The Howard Smith Company have been making rapid strides of late and have been securing a big share of the paper business in their particular field.

THE ST. MAURICE PAPER COMPANY.

The Union Bag & Paper Co. has a Canadian subsidiary, the St. Maurice Paper Co., Ltd., which it is estimated on good authority will earn \$1,000,000 net in the calendar year 1916. Union Bag owns 75% of the \$5,000,000 stock outstanding, so that the contribution of this one source alone to the parent treasury will equal \$7.50 a share on Union Bag capital.

St. Maurice will probably begin producing newsprint next month. The company is erecting a paper mill, a Kraft mill and a sulphite plant, the annual outputs of which will be 30,000 tons of newspaper, 12,000 tons of Kraft and 18,000 tons of sulphite.

Of course, until these mills are completed the earnings of St. Maurice will not be at their maximum. But the company is even now earning a substantial sum inasmuch as it is producing 110 tons of ground wood pulp a day, which is being sold to other paper manufacturers. The company owns 2,000 square miles of crown land timber limits, with sawmills, in Quebec. These plants have an annual capacity of 40,000,000 feet of timber.

The St. Maurice Paper Co. is a consolidation of three former subsidiaries of the Union Bag & Paper Co. When Union Bag Co. sold out it accepted as entire payment stock in the new company, which is carried at par in the balance sheet. The actual market is understood to be around 60, or practically double the price six or eight weeks ago.

The Union Bag and Paper company is in process of reorganization. Some \$27,000,000 of stock is being converted into \$10,000,000 stock of a new company. The old company had 11,000,000 preferred and \$16,000,000 common, the latter practically valueless and the most diluted kind of water.

Under the reorganization the present \$11,000,000 preferred gets \$8,000,000 new stock and the old common but \$2,000,000 a ratio of 8 to 1.

On the basis of \$300,000 per month the company is earning at the rate of over \$30 per share on its present \$11,000,000 preferred, or about 35% on the \$10,000,000 stock of the new company. This is after allowing for 5% interest on the \$3,300,000 first mortgage bonds, due in 1930.

DYES FROM ORANGE WOOD.

Due to the investigations of the Forest Products Laboratory at Madison, Wisconsin, the manufacture of dyes from the waste of osage orange wood has become a commercial success. Carloads of the wood are now being shipped to eastern extract plants from Oklahoma and the dye is now produced at the rate of about \$750,000 per year. Previous to the establishment of this industry, the waste of the osage wood had no market value and the extract plants were importing dye woods from Mexico and Central America at a very high cost.

AN UNANSWERABLE ARGUMENT.

(Boston News Bureau.)

It will be no "still small voice" that will be raised against the action of International Paper Co. in advancing the price of newsprint delivered for 1917 to the equivalent of 3¼ cents per pound. But it is doubtful if the newspapers which are the most loudly critical, realize that a paper mill which is dependent upon the open market for its supply of raw material could not make newsprint at the price International Paper has named for delivery in 1917. Sulphite pulp, of which newsprint paper contains approximately 25%, is now selling around \$100 per ton at the sulphite mills and the mill which converts it into newsprint will pay \$25 per ton of paper for this item. Ground wood, which constitutes 75% of newsprint paper, is selling at \$30 per ton f.o.b. ground wood mill. As it takes approximately 110 pounds of pulp to make 100 pounds of paper, this brings the total cost per ton to \$52.25 for the raw materials alone. Add to this a freight rate of 12 cents per 100 pounds for pulp, 40% dry, and the cost per ton of raw material comes to \$58.85. Manufacturing costs easily average \$15 per ton, which makes the total cost of the paper about \$74 per ton. Thus the mills dependent on the market for raw materials, cannot break even on 3¼-cent newsprint.

In normal years the production of newsprint drops down materially during the summer months of June, July and August, and stocks are accumulated for the big fall demand. During these three months this year, however, total stocks on hand at all points decreased 7,316 tons, or 10.6%, as against an increase of about an equal amount for the same three months of 1915. This, notwithstanding that machines have been running at a much greater speed than they were ever expected to run, and ordinary shut-downs for repairs and replacements have not been made this summer.

HOW LONG WILL OUR TIMBER LAST?

In discussing in a recent article the question, "How Long Will Our Timber Last?" Mr. R. H. Campbell Director of the Dominion Forestry Branch says it is futile to estimate the probable date of exhaustion. Even if the data of supply were on hand, which they are not, the data of consumption are most variable. "We can hope to postpone exhaustion of supply indefinitely" by proper forms of conservation, such as the use of inferior material. That this is being done now the writer demonstrates from price movements. In the last five years the average price of lumber has increased slightly compared to the increase in value of the best grades. In 1900, "White pine good sidings in Ottawa was from \$33 to \$38; in 1914, \$58 to \$65, an increase of \$2 per year. The average price for White pine lumber in 1908 was \$20.03, in 1913, \$20.79, an increase of only 15 cents a year.

BELTS FROM PAPER YARNS.

A new substitute of leather belts is made in Germany from paper yarn, marked "Sackolm." The new product has stood a satisfactory and prolonged test in various trades in which the new belts have been used for transmission of up to ten horsepower; they are made in sizes of from 20 mm., about 4-5 of an inch, to 150 mm., about 7-inch in width, and from 3-16 to ¾ of an inch in thickness.

PULP AND PAPER NEWS

The Dominion Fibre Co., whose factory at Doon, Ont., was burned out a few months ago, have leased premises at Guelph, Ont., where they will employ about fifty persons.

Joseph Maughan, for the past thirteen years Crown Timber agent at Sault Ste Marie, died suddenly from a paralytic stroke last week, aged sixty years. He had been engaged in business in Northern Ontario since 1886 and was widely known.

S. F. Duncan, secretary-treasurer of the Provincial Paper Mills Co., Limited, Toronto, has returned from a few days successful duck hunting along the St. Lawrence near Cornwall.

Thomas Gain, sales manager of the Don Valley Paper Co., Toronto, has gone on a trip to Hamilton, Bermuda, for the benefit of his health. Mr. Gain has not been feeling well for some time and his many friends in the trade trust that he will return in a few weeks completely restored to strength.

J. G. Elliott, of the Kingston Whig, President of the Canadian Press Association, and E. Roy Sayles, of the Port Elgin Times, Chairman of the Weekly Section of the C. P. A., have returned from an extended tour through Quebec and the Maritime provinces where they addressed several meetings of publishers in regard to higher subscription rates owing to the increased cost of paper, ink, etc. They meet with an encouraging reception.

The Map and Advertising Co., Limited, with a share capital of twenty thousand dollars and head offices in Toronto, has been granted a charter to conduct a general advertising business, and manufacture and construct advertising devices and novelties and carry on a printing, publishing, engraving and other business. Among the incorporators of the new company are Robert G. Black, Robert J. Law, George E. Redman and James A. Stewart.

T. H. Watson, former President of the Spanish River Pulp and Paper Mills and a director of the Toronto Paper Mfg. Co., has entered an appeal from the award of the official arbitrator, in the Appellate Court, against the city of Toronto. The arbitration appealed from was to determine what compensation should be paid by the city for the land belonging to Mr. Watson situated on the Lake Shore Road, Humber Bay and Jane street, expropriated by Toronto, for public park and boulevard purposes. The official arbitrator awarded Mr. Watson \$52,550, with interest from time of taking possession and costs of arbitration. Judgment has been reserved in the appeal.

S. R. Armstrong, general manager of the Mattagami Pulp and Paper Co., Toronto, is spending a few days at the mill at Smooth Rock Falls, where fine progress is being made on the work. Concrete is now being poured in the foundations and erection of the superstructure will be undertaken at once. A fall of twelve inches of snow was reported at Smooth Rock Falls last week.

A. M. Huestis of Toronto, has been appointed Canadian representative for Franklin H. Kalbfleisch of New York, manufacturer of acids, chemicals and dyestuffs and paper makers chemicals and also for the Crown Chemical and Color Corporation of New York, makers of satin white, and Samson and White, of London, Eng., dealers in French casein.

L. F. Houpt of Buffalo, N. Y., President of the Houpt Paper Mills, Limited, Camden East, Ont., was in Toronto last week on business and reports that the alterations and improvements to the mill are going ahead satisfactorily and operations will be commenced in the course of a few weeks.

The by-law to ratify an agreement and to give one hundred acres of land as a site for a new sulphite pulp mill was carried by a vote of 1,200 to 40 when submitted to the ratepayers of Port Arthur recently. The interests at the back of the new project will erect a plant which will have an output of one hundred and fifty tons per day. There will be three units of fifty tons each and later a paper mill will be added. The plant will be located at Bare Point in the north end of the city. Under the agreement by which pulp limits are secured from the Ontario Government the three units of the plant must be completed within three years. It is expected that the first one will be finished and in operation within a year.

A. G. Pounsford, of Toronto, Safety Engineer of the Ontario Pulp and Paper Makers' Safety Association, who attended the National Safety Council in Detroit, Mich., October 17th to 21st, was highly honored in being elected secretary of the Pulp and Paper Section, of which S. F. Shattuck, treasurer of the Kimmerly Clark Co., Neenah, Wis., is the chairman. Mr. Pounsford, who is deeply interested in safety work and is most enthusiastic in anything that he undertakes, will make a capable and efficient secretary. That this distinction should come to Canada is no small recognition of his worth. There were about twenty-five hundred delegates in attendance at the gathering in Detroit, Mich., and among the representative of the pulp and paper trade from the Dominion were F. M. H. Cushing of the Montrose plant of the Provincial Paper Mills Co., at Thorold, Ont., A. S. Varney and Master Mechanic Davis of the Canada Paper Co., Windsor Mills, Que.

I. H. Weldon, President of the Provincial Paper Mills Co., Toronto, left last week on a deer hunting trip to French, river district.

E. E. Mansfield, assistant secretary of the Cliff Paper Co., Niagara Falls, N. Y., was in Toronto recently, calling upon the members of the trade.

Mr. Smith of the firm of Smith, Davidson and Wright, wholesale paper dealers and manufacturing stationers, Vancouver, was in Montreal and Toronto recently on business. Some years ago he was connected with W. J. Gage & Co., Toronto, and reports business on the Coast as much improved.

At the annual meeting of the Association of Canadian Advertisers, held in Toronto last week, publications, whose circulation is artificially stimulated by the gifts of premiums and such like devices, came in for some rather strong condemnation and the sentiment of the members was against using space in such media. The report of the committee on circulation and rates included figures to prove that the greatly increased cost of present day publications was being carried by the advertisers to such an extent that people purchasing any ordinary newspaper did not pay the cost of paper used in printing. It was shown that the cost of production of an ordinary newspaper was from three to five cents a copy and regarding one particular medium figures there were presented, figures which proved that the expense of production per subscriber amounted to ten dollars a year and yet the subscription rate was only three dollars annually. The next annual meeting of the Association of Canadian Advertisers will be held in Montreal.

Several improvements are being made to the plants of the Spanish River Pulp and Paper Mills. At the Soo a third digester is being added to the sulphite plant. It is 17 x 54 feet and will increase the output of sulphite to over a hundred tons a day. The 110-inch, Black and Clawson cylinder wrapping machine will be in operation by the first of the year and will have a capacity of about forty tons per day. At Espanola, the four new grinders recently installed are in operation making twenty-eight in all, with an output of about 170 tons of ground wood daily. Three new water tube boilers are being placed in position at Sturgeon Falls, while the new concrete, wood room, equipped with drum barkers has been completed there and is now in operation having a capacity of two hundred cords a day. A new barker room has been built at Espanola and similarly equipped while another drum barker has been built at Espanola and similarly equipped while another drum another drum barker has been added at the Soo. The new equipment saves about twelve per cent. of the wood as compared with the disc barkers and all wood is handled automatically.

REDUCE SIZE OF TICKETS.

The size of railroad tickets will be reduced to make a saving in price of heavy paper used, according to a resolution adopted by the American Association of Passenger Traffic Officers. Railroad time tables are to be shortened wherever possible.



LIEUT. FARISH OWEN,

Formerly transportation manager for the E. B. Eddy Co., Ltd., Hull, Que. He went overseas with Army Service Corps April, 1915, and is now an aviator on the Salonika front.

PAPER FROM BAMBOO.

The United States Department of Commerce sees possibilities of paper shortage problem being solved in Philippines. Bamboo plant easily grown there is convertible into high-class pulp at maximum cost of \$21 a short ton, or little more than one cent a pound f.o.b., Manila. Mill with daily capacity of 20 tons be equipped for \$200,000. Paper may rise to prices ranging from 4 to 5 cents a pound according to the commerce department. France is paying 9 cents a pound for newspaper.

CONSUMING CANADIAN PULP.

The Carthage Sulphite Pulp & Paper Company, Carthage, N. Y., has closed a contract with the Provincial Industries, Limited, a Canadian corporation, for a ten-year supply of pulp wood, to be shipped during a period of ten years. Between 50,000 and 60,000 cords will be shipped each year, and this will be used by the two Outterson mills at Carthage.

DAILY NEWSPAPERS.

There are 2,580 daily newspaper in the United States.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, October 30.

A reduction in the size of Sunday Newspapers as a means of conserving the newsprint paper supply of the United States and possibly preventing the suspension of smaller newspapers was recommended in a letter sent on October 16th by the Federal Trade Commission at Washington to all the publishers of larger Sunday papers. The letter follows: "In connection with its investigation of newsprint prices the commission has given serious consideration to possible means of preventing the suspension of papers because of the increasing scarcity and advancing prices. The present situation can only be alleviated by increasing the output or reducing consumption. The commission has conferred with a number of prominent publishers regarding ways to reduce consumption in addition to the cutting off of returns, eliminating wastes, etc., which many newspapers are reported to have already done. These publishers are of the opinion that there is still an opportunity to effect a considerable reduction in consumption by cutting down the size of Sunday newspapers. They feel that the elimination of certain features would meet with public approval, and would not decrease the revenues of the publishers. The paper saved by cutting down the size of one large Sunday edition several pages would be sufficient to keep a number of smaller papers supplied for a considerable time. Unless present supplies of papers can be increased, which does not now seem probable, such unselfish action on the part of large city papers appears to be the only means that will save many of the smaller publishers from going out of business. The commission asks your co-operation in this matter, and would like to know your attitude toward this proposition. The commission would also appreciate any suggestions that occur to you regarding practical ways of making this proposal effective."

The New York World was outbid several weeks ago in a fight for the purchase of the Remington Paper & Power Company, of Watertown, N. Y., with mills at Norwood and Norfolk. Mark S. Wilder closed the deal that had been pending for several weeks. He paid \$1,500,000 for the properties and good will.

It is understood on good authorities in New York paper circles that a syndicate of Paris newspaper publishers is negotiating with parties connected with the Donnacona Paper Company for the purchase of that company's mills at Donnacona, Que. It is stated that the syndicate failed to transact the deal some months ago and immediately sought recourse in the purchase of the Remington Paper and Power Co. When they were outbid by Mark S. Wilder several weeks ago, plans were resumed to go after the Canadian concern again.

The vast resources of the National Forests of the mountain country of the western part of the United States are to be drawn upon to relieve the stringency

now experienced by the paper manufacturers. Experiments in progress in the testing laboratories at Madison, Wis., show that chips of the various woods that thrive in the Rocky Mountains are well suited to pulping for paper making. Wisconsin paper companies are now negotiating with railroad companies for rates for shipping experimental loads of chips of Western woods adopted for paper. The plan is to cut the trees into chips, dry them, and bale them for shipment. It is expected that they can be delivered at the Wisconsin mills at very slight increase cost over local woods.

Good success is being met, it is claimed in the manufacture of print paper under the process recently patented by Dr. Thomas Jespersion of Neenoh, Wis., for the removing of ink from paper containing ground wood. Paper is now being made under the new process at Combined Locks, Wis. Dr. Jespersion states that there is not over 10% loss in the process and no additional machinery is needed. Heretofore, print paper once used could be manufactured only into wrapping paper, carboard and building paper; and would have to be sorted. Newspapers are now being printed on paper made under the Jespersion process.

The dispatch from Milwaukee, Wis., under date of October 22th, states that three local associations of printers will urge through their congressman a Federal investigation of the price of newsprint paper: "An investigation made by a committee from the North Side Master Printers' Association into the conditions of the paper manufacturing industry in Wisconsin revealed that the prevailing prices were entirely out of proportion of the cost of production," said F. R. Wailke, vice-president, "and conditions warrant a thorough investigation." A committee has been appointed to confer with the Congressman relative to relieving the situation, possibly by National legislation.

Owing to the high price of newsprint paper many of the papers throughout the country are either suspending publication or advancing the prices of their daily editions. The New York Evening Journal was one of the leaders in this matter. During the past fortnight this paper advanced its price from one to two cents in all cities outside of the Metropolitan zone. The advance will not effect local deliveries at present, at least.

Arthur C. Hastings, president of the American Writing Paper Co., at Holyoke, Mass., states that the only reason his company's mills are not operating to capacity is the shortage of raw material. Notwithstanding this curtailment of operations, however, this concern is turning out more finished product now than ever before. President Hastings says that orders continue to come in in a surprising way, so much so that they have sufficient business in hand to keep the mills going for some months to come.

Word has been received at Washington that owing to the scarcity of print paper in Germany and the consequent high prices, many of the smaller papers throughout the Empire have found it necessary to suspend publication, for the present at least, while others have greatly reduced their output and number of pages. The newspaper publishers of Wurttemberg recently called a special session to consider the situation. Subsequently they passed resolutions asking the Government to place a fixed price on print paper in order to protect the smaller newspapers. In Austria the Government has already taken hold of the matter, dividing papers into 1st and 2nd class and limiting them to a certain number of pages each day, and also fixing the price at which they can be sold.

* * *

Another paper mill to change ownership during the past fortnight is the Amboy Paper Company at Amboy, N. Y. E. L. Outterson, well-known in paper circles in Northern New York, purchased this mill for \$30,000. He takes immediate possession and will continue operating the mill, making wrapping, heavy manila and tag board.

* * *

At a meeting of the stockholders of the Watervliet Paper Company at Watervliet, Mich., during the past fortnight, it was decided to greatly increase the output of the company's plant. Accordingly orders have been placed for another machine which will be installed as quickly as possible.

* * *

The New York American published last week a special interview with one of the officials of the International Paper Company, relative to the price of newsprint paper in 1917. "Although our company has not yet taken a single contract for 1917," said the official, "we expect to announce our 1917 prices by November 1st. The outlook, however, is that printpaper will be advanced to 3¼¢ a pound delivered, which is \$20 a ton over 1916 price." As to prices for delivery this year, he said, anyone that has paper can get almost any price asked, even five cents a pound. The International, he added, now has a surplus on hand of between 26,000 and 27,000 tons, less than the normal surplus at this season of the year. Production at present is absolutely at capacity, he declared, ranging from 1,800 tons to a maximum of 2,000 tons a day.

* * *

The mills of the Farley Paper Company at Farley, Mass., have been purchased by the McMillan Paper Company of North Adams. Repairs to the machinery and equipment have been started and when completed the mill will resume operations under the new ownership.—R. W. J.

WANT AN INVESTIGATION.

Three Milwaukee associations of printers will urge Federal investigation of price for print paper, on ground that investigation in Wisconsin revealed that prevailing prices were entirely out of proportion to cost of production.

PAPERS HAVE 28,000,000 READERS.

The newspapers of the United States have a circulation of 28,436,030.

PULP AND PAPER NOTES.

Mr. G. C. Piche, Chief Forester of Quebec, has decided to postpone the opening of the Government Nursery and Forest Experiment Station until next spring.

Ellwood Wilson, Jr., who studied forestry and engineering at Cornell and McGill Universities, has enlisted with the 242nd Forestry Battalion, C. E. F., and has been given a commission as lieutenant.

Yale Forest School has instituted "research and instruction in tropical forestry" and has appropriated \$5,000 for two years for this purpose.

United States imports of mechanical pulp in the fiscal year ended June 30th, 1916, reached a value of \$3,148,173, being practically the same as in 1915, when they reached a value of \$3,141,119.

A shipment of bean stalks is being made to the Bureau of Standards at Washington for testing by the paper laboratory of the Bureau.

The British Government has decided that the restrictions on the importation of paper shall now be increased, so that only one-half the weight on the basis of the importation in 1914 will be allowed to come in. The restriction on the importation of paper-making materials remains at one-third, as heretofore.

James A. Emery, general counsel of National Association of Manufacturers, says Japan is ready to sell white paper in the United States at lower price than asked by American or Canadian manufacturers.

The stand of timber on the two great National Forests in Alaska is estimated by the Forest Service as over 70 billion board feet, while the annual growth will, it is said, produce of pulpwood alone enough for the manufacture of three thousand tons of wood pulp a day.

Nine fires, which either partially or wholly destroyed woodworking plants, in Canada were reported during the past month.

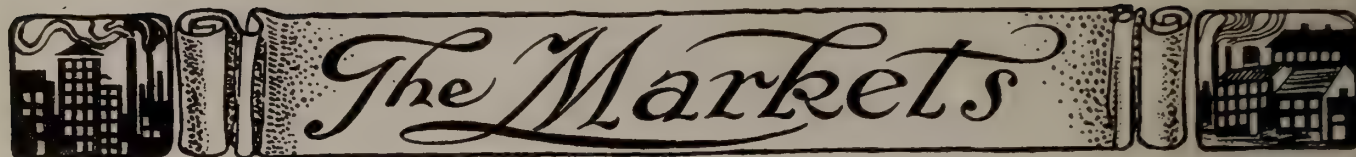
Price Brother's new newsprint mill will be ready in February of next year with a capacity of 62,000 tons per annum and the pulp production will be increased to 55,000 tons per annum.

A NEW SULPHITE PLANT.

The Colonial Pulp & Paper Mills, Limited, will erect at Quatsino Sound, Canada, a sulphite plant having a capacity of one hundred and twenty tons a day. The first unit will have a capacity of sixty tons daily. It is expected that the mill will be completed in about a year.

TO REDUCE SUNDAY PAPERS.

A reduction in the size of Sunday newspapers as a means of conserving newsprint paper supply of the country was recommended in letter sent out recently by federal trade commission to all publishers of large Sunday newspapers in United States.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The news situation is stronger than a couple of weeks ago and publishers are on the anxious seat regarding what they will be called upon to pay when contracts are renewed for the coming year. The recent interview with the federal government and conference with the producers of newsprint is in a state of stau quo and whether the Dominion authorities will hold an investigation cannot be ascertained. There is a disposition among those who have their ear to the ground to think that such a course will not be necessary. The Canadian mills will in all likelihood take care of their domestic customers at a less rate than they receive for newsprint across the line.

Speaking to the *Pulp and Paper Magazine* a leading manufacturer of newsprint remarked that Canadian dailies with their limited circulation, advertising and sources of revenue as compared with those of the great American centres could not afford to pay the figure that the latter could. He knew for a fact that every exporting mill was safeguarding local customers first and the publishers had no reason to complain of the service they were getting. He believed that all contracts would be at three cents at mill for the coming year although prices will not be definitely fixed until the end of the present month. Newsprint would, in his opinion, never be as cheap again as it was. The mills were now making a little money for the first time in their history and would be able to clear up a large share of their indebtedness.

There has been some talk of an embargo being placed on newsprint in Canada, in that the amount exported to the United States would be restricted, but it is felt that such a course will never be taken by the authorities at Ottawa for several reasons as long as it is known that domestic demands are being met efficiently. In the first place such a measure would destroy development and confidence in the pulp and paper industry in Canada in which a large number of American capitalists have heavy investments. This would mean a serious blow to a country like the Dominion which is destined to become one of the greatest, if not the greatest, paper producing land in the world. Paper is a privately owned commodity. There are vested rights and were it not for the capital from outside of Canada, which has been put into many flourishing enterprises in this line today, there would not be the large mills which afford employment to so many thousands of men.

The buying of common and preferred stock in all pulp and paper enterprises on both Toronto and Montreal exchanges continues with feverish interest and some abnormally high values have been reached. There is a feeling that on certain stocks at least the movement has transcended the safe and substantial and entered the dangerous class. There is no doubt a great future for the companies who will make large profits from the high prices for all kinds of finished

materials but admitting this there is no guarantee that because two or three concerns are making a marvellous showing that every enterprise will do equally as well.

All mills are working at their utmost capacity and the labor problem is growing more acute. One pulp plant is reported to be running at only half capacity owing to the heavy drafts made on its employees through enlistments.

The Ontario Government which some time ago inserted advertisements in all the leading papers calling for tenders for the right to cut pulp wood and pine on the Pic River in the district of Thunder Bay, which tenders will close on December 1st, is understood to be receiving a large number of inquiries. Now comes the announcement that another large limit on the Black Sturgeon river will also be thrown open and bids will be received up to February 1st. The same conditions apply as in the Pic river concession and it looks as if Thunder Bay district will have two large pulp mills, and later paper mills, in operation before two years have passed.

Some weekly publications which have been unable to obtain book paper, have "laid up" until after the war. Another leading Canadian weekly has been compelled, owing to high cost, to change to half tone newsprint and reduce the subscription price per copy by half.

There was a conference of the book and writing manufacturers with the trade and technical journal publishers last week in which the manufacturers promised to take care of all customers and do the very best they could under the trying circumstances. They will make the best paper possible from cheaper materials. Other publications which cannot stand the cost of book stock will adopt half tone news. The number of pages of editorial matter is being cut down constantly in weekly and monthly trade journals in order to keep down costs.

The sulphite market gains in strength all the time and there appears to be no idea where prices will end. The feeling is that quotations will keep awaiting mill, but few firms have any ground wood for sale demand, and as high as forty-five dollars is reported for it delivered at Wisconsin and Michigan points. Thirty dollars is now being obtained in Ontario at the mill, but few firms have any ground wood for sale.

There has been another advance of a quarter of a cent in kraft, and all kinds of wrapping papers are very stiff in price and will likely go higher. Paper houses report that business is good in every line and that customers realizing the situation pay the exalted prices without murmur. There is not a mill, but is sold months ahead. One leading printing establishment succinctly sums up conditions in the following notice from a supply house. "We have been forced to withdraw all current prices and makes advances on all grades. Conditions have grown so acute that we are unable to ascertain with any degree of certainty

what the production cost of any of our grades will be during the next few months and, until the situation stabilizes itself, we can offer no firm quotation." "It will be a long time before you will again buy printing at as low prices as right now," adds the firm.

Manufacturers of envelopes and paper boxes are driven almost to desperation due to the inability to get help, particularly girls and wages in some plants have doubled.

Some weekly newspapers who have not increased their prices to a dollar and a half are solving the high cost perplexity by issuing only four pages and cutting out the patent or ready-print inside.

One condition which adds to the rapidly rising cost of all kinds of paper and pulp is the increase in quotations for the raw product. Peeled wood brings as high as nine and a half dollars per cord at points along the Timiskaming and Northern Ontario railway which is fifty per cent. increase during the past few months. It is exceedingly difficult to get men to go to the woods as the forestry overseas battalions have drained the available supply.

In the rag and paper stock market the demand for rag and roofing stock is rather quiet. One Toronto firm has sent notices broadcast throughout the city asking for one thousand tons of rags and two thousand tons of paper and books. They offer house holders 25 cents per hundred pounds for newspapers and books, bundled, and 20 cents loose; 3 cents per pound for tailor clips according to quality, and for mixed rags from one cent up per pound.

Speaking of market conditions another firm stated this week that although they were selling the mills at the prices named in the subjoined market quotations they believed each grade to be worth from one dollar up more in the highest possible market. Just at present they were able to purchase and sell at these figures those who had been taking stock from, them when times were dull and they now let them have supplies at as low a price as possible. "We hear reports of transactions going on at a very high figure," they add. Undoubtedly krafts, manila and whites are at a premium while news and mixed papers are in strong demand with scarcely enough stock to satisfy the requisitions. A mill man remarked lately that he was trying desperately to get in a stock before the cold weather started in when collections became smaller as the number of gatherers on the streets are then considerably lessened. Many do not ply their trade during the winter months.

The following are the Toronto prices:

Paper.

News (rolls) \$3.00 up, at mill, in carload lots.
News (sheets), \$3.25 and higher for small lots, at mill, in carload lots.

Book papers (carload), No. 3, \$7.00.
Book papers (ton lots), No. 3, 7.00c to 8.00c.
Book papers (carload), No. 2, 8.50c to 9.00c.
Book papers (ton lots), No. 2, 8.75c to 9.50c.
Book papers (carload), No. 1, 9.00c to 9.75c.
Book papers (ton lots), No. 1, 9.25c to 10.00c.
Sulphite bonds, 11 cents up.
Writings, 9 cents up.

Grey Browns\$4.00 to \$5.00
Fibre\$7.00 to \$8.50
Manila, No. 1\$7.00 to \$8.00

Manila, B.\$5.00 to \$6.50
Unglazed Kraft\$8.50 to \$10.00
Glazed Kraft\$8.75 to \$10.50
Tissues, bleached.....\$1.60 to \$2.30
Tissues, (manila or white sulphite)....\$1.20 to \$1.60
Tissues, cap.80c to \$1.15
Natural, greaseproof13c to 18c
Half Bleached Greaseproof15c to 19c
Bleached greaseproof17c to 21c
Genuine Vegetable Parchment22c to 25c
Drug papers, whites and tints.....9c to 12c
Paper bags, Manila30% discount.
Paper bags, kraft,15% discount.
Confectionery bags,15% discount.

Pulp.

F.O.B. Mill.

Ground woodpulp\$34.00 to \$36.00
Easy Bleaching Sulphite6c to 6½c
Sulphite, news grade\$105 to \$110
Sulphite (bleached)8½c to 9c
Sulphate\$120.00

Paper Stock.

No. 1 hard shavings\$4.00
No. 1 soft white shavings\$3.50
No. 1 mixed shavings80c
White blanks\$1.45
Heavy ledger stock.....\$2.35
No. 1 book stock.....\$1.57½
No. 1 Manila envelope cuttings\$2.40
No. 1 print Manilas\$1.25
Folded news77½
Over issues77½
No. 1 clean mixed paper70c
Old white cotton\$4.65
Thirds and blue\$2.75
No. 1 white shirt cuttings\$7.25
Black overall cuttings\$2.75
New light flannelettes\$5.50
Ordinary satinets and flock\$2.00
Tailor Rags\$1.90

MONTREAL MARKETS.

Book—News—Writing and Posters.

Roll News, \$3.00 for carloads proportionate increase on small lots.

Sheet News, \$3.25 to \$3.50 carloads, \$3.75 up small lots.

No. 1 Book, 7.50 to 8.25.

No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.

No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.

Writings, 6.95 to 10.

Writing Manila, 6.95.

Cover papers, 11 to 14½c, according to colors wanted.

Colored Poster, 6½ to 7½c.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs. . .	3.40	3.65	3.90

NEW YORK MARKETS.

New York, October 30th.

Since our last report, there has been no material change in the status of the ground wood pulp market. It is understood that the water conditions through upper New York State are growing worse and that the immediate prospects are not the very best. In fact, it is feared that it may be necessary to shut down a number of the machines in certain parts of the state because of the lack of a sufficient water power. Up to this time, the grinders have been fairly fortunate, although a number of mills have already shut down a few of their machines. Consumers are now reaching a stage where they are beginning to fear for the worst. The future is now the subject of much speculation. It is certain that the market will not ease at all for many months to come. But the big question receiving consideration is "How high will ground wood go?" Not only this, but what will be the prospects for getting pulp? If conditions continue as they are, and it seems very likely that they will continue to do so, consumers of ground wood will find themselves in a very delicate situation. Even at this writing, it is understood that there is comparatively little pulp being offered by the mills for they have all contracted ahead for the rest of the year. Whatever pulp is still available, is being held at present market prices which now range as high as \$34 per ton, f.o.b. mill. It is unfortunate, at this stage, when the demand for ground wood is so strong and when it seems to be growing stronger almost every day, that the prospects of keeping all of the mills operating at capacity are poor. The use of ground wood to substitute sulphite is becoming more and more common, because of necessity. According to the latest reports, ground wood is now being bleached. In tissues, wrapping papers and other papers, where formerly the percentage of sulphite was fairly large, this percentage has been reduced to the best possible minimum. From the reports received from the news-print mills, it is certain that these concerns are consuming all of the pulp which it is possible for them to consume.

Sulphites are stronger than ever. However, it is believed that regardless of what happens the market has reached its top, for it is not likely that prices can go any higher. The exact condition can only be realized when it is known that an actual sale of 100 tons of strong unbleached sulphite, domestic stock, was sold recently at 6 cents a pound. This is known to be a fact. It has been stated by a few importers, and it appears very plausible, that the general public is not really aware of the tremendous scarcity of stock available. From abroad, little is coming over and the prospects are far from encouraging. It seems apparent that

the Scandinavians are not anxious to bother with the American trade and are desirous of making the best of the bonanza offered them in the commerce with the European countries. So long as the embargo on chemical pulp can be used as an aid in avoiding shipments to the United States, it is certain that it will continue to be done. The opportunity for Canada was never greater and it appears, from the volume of the imports from that country that she is availing herself of the advantage. Foreign bleached pulp is now holding as high as 10 cents; domestic bleached is at 7 to 7½ cents; foreign unbleached is quoted at 6 cents and higher; domestic unbleached is generally regarded at 5 to 6 cents. Kraft is acting sympathetically and is practically unobtainable at 6 to 6¼c.

The past few weeks have been very poor ones to the rag dealers, for there has been no real life visible during that time. The fact is that conditions today are not what was expected when the stock men predicted a very active fall for all dealers in their line. At the time of the prediction, it was figured that, with the writing and other mills working at capacity during the entire summer and, with the rush of fall business enough to insure the continuation of this state for some time, it was a foregone conclusion that the demand for rags would be steady and strong. Thus far, the contrary has been the result, although it must still be remembered that prices are still much higher than they were before the war. From reports heard about the city, a number of the rag dealers have become somewhat discouraged. They had been caught with large stocks, when the boom crashed during May. Others, expecting an active fall, had been buying up whatever was in sight, putting it in warehouse for the crucial moment. Now, however, the carrying of this stock is proving a heavy burden, and it is problematical as to what will happen in the near future. As one dealer expressed it, "The manufacturers have us well bottled up." They are keeping each other informed with regard to our doings and are buying in such a way that it is impossible for the market to get ahead. Roofing, which we have stated on other occasions, is the keynote of the situation, has not been showing much life. New white shirting cuttings are being held for 9c; old whites, at 5c to 5¼c; house soiled whites, at 4c; thirds and blues, at 3¼c to 3½c.

Rope and bagging have been holding pretty well under what is considered a good demand. There is intimation, however, that this condition will not continue for any length of time. It is noticed that the inquiries are beginning to drop off. Rope is quoted at 5½c to 6c. Sound bagging can be had at 3c to 3½c; mixed bagging, at 2½c.

In waste papers, activities have been going along at a good pace. The shortage of pulp has caused many of the manufacturers of paper to compete for this commodity and it is likely that, as time goes on this competition will grow keener and be the means of forcing the market up considerably more than it has already gone. The demand is reported to be good in practically all grades. Hard and soft white shavings, in particular, are in demand and are being sold at as high as 5c to 5¼c, for the hard, and 4½c for the soft shavings. Ledger stock is going as high as 3c; crumpled book stock, at 1¾c; mixed papers as high as 90c.

The upward tendency of prices in the paper market, is just as strong now as it has ever been. Paper is con-

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SOLUBLE CHINESE BLUE

We have been able to place on the market our standard qualities of Chinese (Prussian) Blues owing to a very fortunate purchase of Raw Materials, of which a considerable quantity has now arrived.

Samples and quotations will be immediately sent out on request.

We manufacture paint and varnish products for every purpose including B.B. Genuine White Lead, B-H. Anchor Cement and Concrete floor paints, Factory Enamel White and paints for metal surfaces which absolutely eliminate all corrosive influences.

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sidered at its replacement value and, each time a concern comes out to buy stock, it has to pay more for it. There seems to be no relief in sight, nor is there any likelihood that it will be easier to get the standard grades of paper with any more ease for some time.

Efforts are still being made to check the mad condition of the news-print market, but all attempts are in vain, for the mills report that they are beset with orders and, doing their best, are unable to take care of any fair percentage of them. It has been whispered that one or two of the large out-of-town publications are on the verge of suspending issue, that is, if they don't succeed in arranging for immediate supplies. It is understood that considerable of this condition is due to the greedy actions of some of the large newspaper publishers who, refusing to cut down the size of their papers or to turn down new advertising contracts, are consuming as much paper as ever and are buying up whatever stock is available. Prediction for the future in this market vary, but all are very high. In tissue papers, the market is unusually firm with prices going higher. The cheaper grades are in great demand and are as expensive as the sulphite tissues. Wrapping papers are all firm and hard to obtain. We have not mentioned boards in our recent reports, so will describe them now. It is predicted that boards will go much higher within the next few months. There is a shortage of straw and the fact that all of the other paper manufacturers are competing for waste papers promises that boards will be so scarce that it will be impossible to get orders unless they are properly made through the right channels.

R. W. Jolly.

THE APPRECIATION IN PAPER STOCKS.

Canadian paper stocks are not the only ones to attain new high levels paper stocks listed in Wall Street have been showing marked gains due to the sharp advance in the price of paper and the unprecedented demand.

The following table gives the low point at which the more important paper stocks listed on the New York Exchange sold this year, as compared with the high point, and the advance:

	Low. High. Advance.		
	1916.	1916	
American Writing Paper pfd...	11	44½	33½
International Paper	9½	51¼	41¾
International Paper pfd.	42½	105	62
Union Bag & Paper	4¼	18½	14
Union Bag & Paper pfd	28	75½	47½

The above showing is more than duplicated by the Canadian companies:

	Low. High. Advance.		
Laurentide	176	216	40
Wayagamack	27	94	67
Riordon	58	128	70
Spanish River pfd.	29	59	30
Spanish River com.	3½	21½	18
Price Brothers	60	95	35
Toronto Paper	42	72	30

AN UNHEEDED WARNING.

Secretary G. F. Steele of the News-Print Manufacturers Association reports as follows:—

I hand you herewith a copy of our Monthly Report showing the production and shipments of all mills which are members of this Association.

Last year the mills reporting to this Association produced 4,731 tons per day, and this year the same number of mills produced 5,265 tons per day. One mill which was reporting last year is not reporting this year, and I have included their estimated production in this figure. This would result in an increased production this year of 534 tons per day.

Of the mills reporting to this Association, I find that the shipments increased to the extent of 576 tons per day and that the inventories at all points, including mill stocks, stocks in transit and stocks at terminal points, compared with inventories a year ago decreased 38,873 tons. As you all appreciate, it is very desirable to have stocks built up to the highest possible maximum on October 1st, and it is little short of a calamity to the newspaper publishers to approach the heavy Fall season with a stock in the hands of all members reporting to this Association amounting to a paltry 58,301 tons, which is only about ten days' supply on the average for all papers procuring their supply of newspaper from the members of this Association.

You will observe from this report how stocks have continually decreased since January 1st, month by month. On October 1st of this year stocks were lower than at previous time in the history of the industry. The Executive Committee of this Association clearly saw this situation in advance and in March of this year approached the newspaper publishers with a desire to acquaint them with the dangers of the situation and to urge them to set their houses in order. Unfortunately the message was not received in the proper spirit and the result speaks for itself. If it should so happen now that a considerable number of small country newspapers, or even larger ones, shall have to suspend publication during these Fall months on account of lack of white newspaper, the fault will not rest upon the shoulders of the manufacturers of this grade of paper, who have done everything in their power to produce a maximum quantity of this grade of paper, as well as to advise the publishers that the remedy was in their hands by reducing consumption in view of the stated inability of the manufacturers of news-print to supply the amount of paper required this Fall. If there had been more unity of action, more unselfishness and less narrow-minded attitude on the part of the larger publishers of news-print paper, if these large users of this grade of paper had heeded the constant admonitions sent out from the office of the American Newspaper Publishers Association and from this office, the present state of affairs would not have resulted. It is greatly to be regretted that more attention was not paid to these words of caution in time to do some good.

At the present time, as you all doubtless know, the publishers seem to be experiencing a severe panic. There are all sorts of rumors afloat about this mill being sold and that mill being sold and it is quite evident that many of the newspaper publishers have awakened too late to the dangers of a situation which could have easily been prevented last Spring, by the larger newspaper publishers. So far as I can see there seems to be no prospect of a diminution in the demand for a long time to come.

If there are any subscribers who would like to part with their copies of the October 15, 1916 issue, we would appreciate receiving a few and would be glad to pay for them.

PULP & PAPER MAGAZINE,

35-45 St. Alexander Street,

Montreal, Que.

TENDERS FOR PULPWOOD & PINE LIMIT

Tenders will be received by the undersigned up to and including the 1st day of February, 1917, for the right to cut pulpwood and pine timber on a certain area situated on the Black Sturgeon River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure, for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario.

Parties making tender will be required to deposit with their tender a marked cheque payable to the Honorable the Treasurer of the Province of Ontario, for ten thousand dollars (\$10,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$10,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned,

G. H. FERGUSON,

Minister of Lands, Forests and Mines.

Toronto, 1916.

N.B.—No unauthorized publication of this notice will be paid for.

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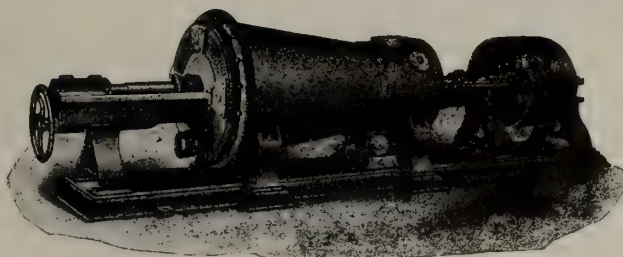
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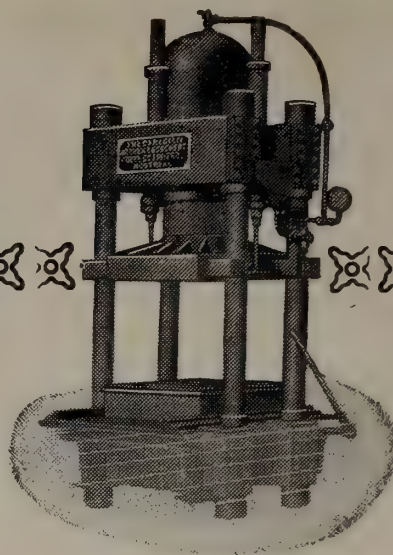
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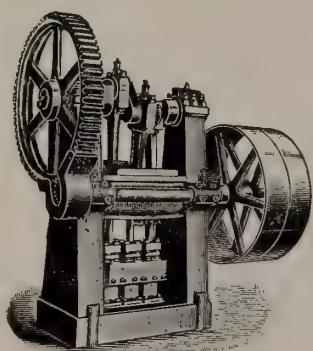
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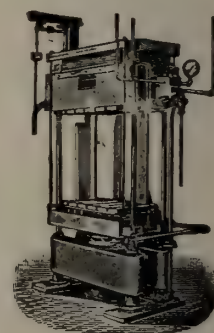


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INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Acid Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Air Compressors:**
Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Alum:**
Kalbfleisch, Franklin & Co., New York.
- Barkers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
- Bearings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Beaters:**
Bertrams Ltd., Edinburgh, Scotland.
Clafflin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J. London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Belting:**
Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.
- Belt Conveyors:**
The Jeffrey Mfg. Co., Montreal Que.
- Bleaching Powders:**
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.
- Bleach Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
- Blowers:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.
- Boilers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Boilers—Water Tube:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Brass Wire Cloth, Fourdrinier Wires:**
Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
- Cable Conveyors:**
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Calendar Rolls:**
Bertrams Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.
- Carriers:**
Northern Crane Works, Walkerville, Ont.
- Cars, Dump and Flat:**
Canadian Equipment Co., Montreal.
Fraser, W., Montreal
Sessenwein Bros., Montreal
- Casein and Satin White:**
Kalbfleisch, Franklin & Co., New York.
- Castings:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.
- Chain Crane:**
Northern Crane Works, Walkerville, Ont.
- Chain Blocks:**
The Jeffrey Mfg. Co., Montreal Que.
- Chain Conveyors:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chain Drives (Silent and Steel Roller):**
Jones and Glassco, St. Nicholas Building, Montreal.
- Change Speed Gears:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Chemicals, Colors, Etc.:**
Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chimneys:**
Canadian Kellogg Co. Ltd., New York.
- China Clay:**
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chippers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Disintegrators:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Coal and Ash Conveyors:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Condensers—Barometric:**
Canadian Kellogg Co., Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Conveying Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls:**
Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
- Couplings:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cranes:**
Canadian Equipment Co., Montreal.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Electric:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Cranes—Hand Power:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cranes—Overhead Travelling:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cut Gears:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Cylinders:**
Bertrams, Ltd., Edinburgh, Scotland.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Covers:**
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Moulds:**
Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Dandy Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.
- Diffusers:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Digesters:**
Canadian Kellogg Co. Ltd., New York.
- Digester Lining:**
Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Dryers:**
Bertrams, Ltd., Edinburgh, Scotland.
- Engines:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Evaporators:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Scott, Ernest & Co., Fall River, Mass.
- Exhausters:**
The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery:**
Process Engineers, Ltd., Montreal, Canada.
- Exporters:**
Parsons Trading Co., New York, N.Y.
- Felts:**
Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Montreal, Que.

MILL SUPPLIES---Continued

Filters:

Darling Bros., Montreal, P. Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Gears:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grate Bars:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Hangers:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Meaters:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.

Iron Castings:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.

Knives:

Arcton, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hawley, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Lathe Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Overhangs:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Re-motives:

Canadian Equipment Co., Montreal.
Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built

Sessenwein Bros., Montreal
Fraser, W., Montreal

Paints:

Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Downingtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrell Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P. Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westby, P. F., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. Enas Wilkinson, Toronto, Ont.

Re-motives:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Snow Blows:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Piping—High Pressure:

Canadian Kellogg Co. Ltd., New York.

Piping—Hydraulic:

Canadian Kellogg Co. Ltd., New York.

Piping—Power Plant:

Canadian Kellogg Co. Ltd., New York.

Piping—Welded:

Canadian Kellogg Co. Ltd., New York

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Boomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulleys:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
Stancilffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P. Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Radial Brick:

Canadian Kellogg Co. Ltd., New York.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Canadian Equipment Co., Montreal.
Fraser, W., Montreal.

Gartshore, J. J., Toronto

Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Reinforced Concrete:

Canadian Kellogg Co. Ltd., New York.

Rope, Cotton and Manila:

Jones and Glasco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Safes:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Salt Cake:

Kalbfleisch, Franklin & Co., New York.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal, Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westby, P. F., Peterboro, Canada.

Shafting:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Shredders:

The Jeffrey Mfg. Co., Montreal, Que.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

MILL SUPPLIES---Continued

Soluble Blue:

Brandram-Henderson Ltd., Montreal.

Spiral Conveyor:

The Watrous Engine Works Co., Limited, Brantford, Ont.

Split Pulleys—Wood and Steel:

The Jeffrey Mfg. Co., Montreal, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sprockets:

The Jeffrey Mfg. Co., Montreal, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Stacks:

Canadian Kellogg Co. Ltd., New York.

Steam Appliances:

Canadian Equipment Co., Montreal.

Darling Bros., Montreal, Que.

Steam Regulator:

Pickles, W. F., Buckland, Conn.

Steel Barrels:

The Smart-Turner Machine Co., Hamilton, Ont.

Steel Drums:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Smart-Turner Machine Co., Hamilton, Ont.

Stokers—Mechanical:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Penman, Ltd., St. Hyacinthe, Canada.

Strainers—Water:

Babcock & Wilcox, Ltd., Montreal, P. Que.

Straw Cutters:

Bertrams, Ltd., Edinburgh, Scotland.

Straw Dusters:

Bertrams, Ltd., Edinburgh, Scotland.

Strawboard Making Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Structural Steel Works:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Stuff Chests:

Jenckes Machine Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Suction Couch:

Process Engineers, Ltd., Montreal, Canada.

Sulphite Mill Equipment:

Advance Eng. Co., Toronto, Ont.

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphate of Alumina:

Kalbfleisch, Franklin & Co., New York.

Sulphate of Soda Calcined:

Kalbfleisch, Franklin & Co., New York.

Sulphate Mill Equipment:

Carthage Machine Co., Carthage, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Process Engineers, Ltd., Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Sulphur:

Union Sulphur Co., 17 Battery Place, New York, N.Y.

Sulphur Burners:

Advance Engineering Co. Ltd., Toronto, Ont.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

Superheaters—Steam:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Tanks:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Darling Bros., Montreal, P. Q.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Tanks—Welded:

Canadian Kellogg Co. Ltd., New York

Transmission Machinery:

Caldwell, H. W. & Son Co., Chicago, Ill.

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que.

Jones & Glassco, Montreal, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Transmission Rope:

Jones & Glassco, Co., Montreal, P. Que.

The Watrous Engine Works Co., Limited Brantford, Ont

Travelling Cranes:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont

Smart-Turner Machine Co., Limited, Hamilton, Ont.

Trolleys:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont

Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Northern Crane Works, Walkerville, Ont.

Tube Cleaners:

Babcock & Wilcox, Ltd., Montreal, P. Q.

Turbines:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Goldie & McCulloch Co., Ltd., Galt, Ont.

Smith, S. Morgan Co., York, Pa.

Voith, J. M. Co., Inc., New York, N.Y.

Voith, J. M., Wurtemberg, Germany

Valts and Valt Doors:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Water Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Jenckes Machine Co., Ltd., Sherbrooke, Que

Smith, S. Morgan Co., York, Pa.

Wire Cloth for Paper Machines:

Christie, Geo., Ltd., Glasgow, Scotland.

Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.

Taylor, J. A., Montreal, Canada.

Westbye, P. P., Peterboro, Canada.

The Watrous Engine Works Co., Limited, Brantford, Ont.

Waste:

Hough, R., London, England.

Wet Machines:

Bertrams, Ltd., Edinburgh, Scotland.

Carthage Machine Co., Carthage, N.Y.

Glens Falls Machine Works, Glens Falls, N.Y.

Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Process Engineers, Ltd., Montreal, Canada.

Sherbrooke Machinery Co., Sherbrooke, Canada.

Voith, J. M., New York, N.Y.

Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R., Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.

Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, O. t.

Union Bag & Paper Co., Cape Madeleine, Que.

Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., E. Angus, Que.

Dryden Timber and Power Co., Dryden, Ont.

Brown Corporation, La Tuque, Que.

Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfound

land.

Bathurst Lumber Co., Limited, Bathurst, N.B.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.

British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.

Booth, J. R., Ottawa, Ont.

Donnacona Pulp & Paper Co., Donnacona, Que.

Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.

Eddy Co., The E. B., Ltd., Hull, Que.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Laurentide Co., Ltd., Grand Mere, Que.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.

Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Gummed Paper Manufacturers:

Gummet Papers Ltd., Brampton, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmillier, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER MILLS

Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Roland, Que., and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

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John Martin Paper Co., Ltd.
Teese & Persse, of Alberta, Limited.

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Clark Bros. & Co., Ltd., 143 Portage.
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John Martin Paper Co., Ltd.
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Latter, N., 104 1/2 Windsor.
Allen, T. C. & Co.

NEW GLASGOW, N.S.:

McGregor, R. & Co.

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Buntin, Gillies & Co., Ltd., John and Jackson.
Murton C. A. 34 King William.
Powis, A., 64 King E.

OTTAWA, ONT.:

Continental Bag & Paper Co.
Barnard, W. R., 374 Bank St.
Eddy, E. B. Co.

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Brown Bros., Ltd., 51 Wellington Street W.
Buntin, Reid Co., 13 Colborne.
Canada Paper Co., Ltd., 112 Bay Street.
Dawson, W. V., Ltd.
Ratcliffe Paper Co., Ltd.
Fisher, E. W., 215 Victoria.
Gaine, T. & Son, 124 Richmond W.
Gage, W. J. Co., Ltd., 84 Spadina Ave.
Hodge-Sheriff Paper Co., McKinnon Building.
Howell, G. A. Co., 10 Wellington E.
Livingstone, H. E. & Co., 80 George.
McNairn, J. H., 5 Jarvis.
Thorne, A. M. & Co., 45 Colborne Street.
Victoria Paper & Twine Co., Ltd., 415 King W.
Waters Bros., 33 Front E.
Wilkinson, E. H., Telephone Building.

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Dawson, W. V. & Co., 17 De Bresoles.
Dickinson, John & Co., Ltd., 216 Lemoine.
Little, T. B. & Co., 23 Cote.
McFarlane, Son & Hodgson, 14 St. Alexander.
Reid, C. DeWolf, Herald Bldg.
Robertson & Parker, St. Paul.
Rolland, J. B. & Son, 14 St. Vincent.
Smith, Howard, Paper Mills, Ltd., 138 McGill.
Federal Paper Co., Ltd.
Rolland Paper Co., Ltd.
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Wilson, J. C. Co., Ltd.
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Andrews, F. H. & Son, 64 St. Paul.
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Whitaker Paper Co., Cincinnati, Ohio.
Castle, Gotheil & Overton, New York, N.Y.
Churchill & Sim, Clements Lane, London, E.C., England.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

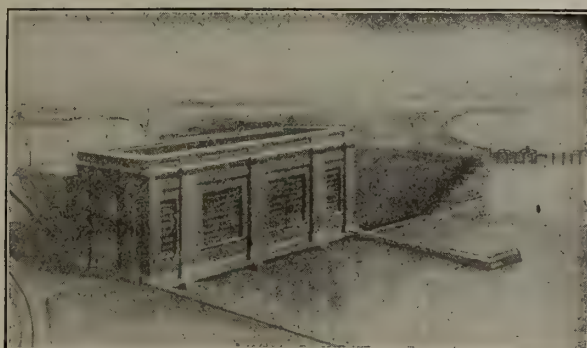
A		H		R	
Albertson, D. J.....	64	Hardy, Geo. F.....	64	Rice, Barton & Fales Machine & Iron	
Ambursen Hydraulic Construction		Hay Knife Co., Peter, Ltd.....		Co.....	16
Co., Ltd.....	11	Hersey, Milton Co.....	65	Riordon Pulp & Paper Co., Ltd.....	66
Ayers, Ltd.....	68	Hooker Electrochemical Co.....	65	Rolland Paper Co., Ltd.....	66
B		Huyck, F. C., Sons.....	12	Rushworth, Wm. A.....	8
Babcock & Wilcox, Ltd.....	65	J		S	
Bates & Innes.....	68	Jeffrey Mfg. Co.....		Sadler and Haworth.....	50
Barker, E. R.....	64	Jenssen, G. D. & Co.....	64	Sandy Hill Iron & Brass Works.....	17
Becker & Co.....	67	Jenckes Machine Co.....	14	Schlick, Leo.....	64
Beloit Iron Works.....	14	Johnson & Sons, Ltd., C. H.....	18	Sewall, Jas. W.....	65
Bertram, James & Son, Ltd.....	10	Johnson, Chas.....	4	Scott, Ernest & Co.....	
Bertrams, Ltd.....	2	Jones, E. D. & Sons, Co.....	17	Sessenwein Bros.....	65
Beveridge Paper Co Ltd.....	60	Jones & Glassco.....		Sherbrooke Machinery Co., Ltd.....	5
Beveridge, Jas., Chatham, N. B.....		K		Smart-Turner Machine Co.....	68
Black-Clawson Co.....		Kimball H. S.....	4	Spielmann Agencies.....	65
Boving Hydraulic & Engineering Co.		Klipstein, A. & Co., Ltd.....	7	Stanciffe Estates Co., Ltd.....	68
Limited.....	6	L		Stebbins Engineering & Mfg. Co.....	64
Bowater, W. V. & Sons, Ltd.....	8	Lawrence Machine Co.....	9	T	
Brandram-Henderson Ltd.....	45	Laurentide Co., Ltd.....	63	Taylor, J. A.....	
The Bronson Company.....		Little, Arthur D., Inc.....	65	Ticonderoga Machine Works.....	10
C		Lombard & Co.....		U	
Caldwell, H. W. & Son, Co.....	18	M		Union Screen Plate Co. of Canada,	
Cameron Machine Co.....	65	Mackinnon, Holmes & Co.....	13	Ltd.....	
Canadian Boomer and Boschert Press		Main Belting Co. of Canada Ltd....	60	Union Sulphur Co.....	18
Co.....		Marx, J. & Co.....	65	V	
Canadian Equipment.....	3	Meincke, G. A. & Co.....	62	Vera Chemical Co. of Canada, Ltd....	6
Canadian Fairbanks-Morse Co., Ltd....	13	Montreal Locomotive Works, Ltd....	63	Voith, J. M.....	12
Canadian Kellngg Company.....	7	Moore & White Co.....	15	W	
Canada Paper Co., Limited.....	66	N		Wallace, Jos. H. & Co.....	64
Canadian Westinghouse Co., Ltd.....	13	Noble & Wood Machine Co.....	49	Walmsley, Charles & Co., Ltd.....	4
Capital Wire Cloth Mfg. Co., Ltd....	60	Northern Crane Works, Ltd.....		Waterous Engine Works Co., Ltd....	4
Carthage Machine Co.....		Norwood Engineering Co. of Can. Ltd	13	Westbye, P. P.....	11
Chambers, Ltd.....	2	O		Wilson-Paterson Co.....	
Chicoutimi Pulp Co.....	67	Ontario Pulp Wood Limits.....	56	G	
China Clay Co.....		Ottawa Car Mfg. Co., Ltd.....	9	Galt Knife Co., Limited.....	63
Christie George, Ltd.....		P		Gartshore, Jno. J.....	65
Churchill & Sim.....		Panzl Digester Lining Co.....	7	Glens Falls Machine Works.....	6
Clafin Engineering Co.....	60	Paper Makers Chemical Co.....	64	Goldie and McCulloch Co., Limited..	
Crossley, T. L.....	65	Parsons Trading Co.....	18	F	
D		Penmans, Limited.....	15	Farrel Foundry & Machine Co.....	
Darling Bros., Ltd.....		Pickles, W. F.....	68	Ferguson, H. S.....	64
DeCew, J. A.....	64	Prather, H. B.....	64	J. Ford & Company.....	
Dean & Son.....	8	Process Engineers, Ltd.....	65	Fraser, W.....	
Dept. Lands, Forests, Mines.....	60	Provincial Paper Mills Co., Ltd.....	59	G	
Disston, H. & Sons, Ltd.....	6	Pullan, E.....	65	Galt Knife Co., Limited.....	63
Dominion Belting Co.....	65	Pulp & Paper Trading Co.....		Gartshore, Jno. J.....	65
Dominion Pulp Woods' Limits.....	54	R		Glens Falls Machine Works.....	6
Downington Mfg. Co.....	16	Rice, Barton & Fales Machine & Iron		Goldie and McCulloch Co., Limited..	
Dunlop Tire & Rubber Goods Co.,		Co.....	16	H	
Ltd.....		Riordon Pulp & Paper Co., Ltd.....	66	I	
E		Rolland Paper Co., Ltd.....	66	J	
Eaton & Brownell.....	64	Rushworth, Wm. A.....	8	Jeffrey Mfg. Co.....	
The E. B. Eddy Co., Ltd.....	66	S		Jenssen, G. D. & Co.....	64
Emerson Mfg. Co.....	9	Sadler and Haworth.....	50	Jenckes Machine Co.....	14
F		Sandy Hill Iron & Brass Works.....	17	Johnson & Sons, Ltd., C. H.....	18
Farrel Foundry & Machine Co.....		Schlick, Leo.....	64	Johnson, Chas.....	4
Ferguson, H. S.....	64	Sewall, Jas. W.....	65	Jones, E. D. & Sons, Co.....	17
J. Ford & Company.....		Scott, Ernest & Co.....		Jones & Glassco.....	
Fraser, W.....		Sessenwein Bros.....	65	K	
G		Sherbrooke Machinery Co., Ltd.....	5	Kimball H. S.....	4
Galt Knife Co., Limited.....	63	Smart-Turner Machine Co.....	68	Klipstein, A. & Co., Ltd.....	7
Gartshore, Jno. J.....	65	Spielmann Agencies.....	65	L	
Glens Falls Machine Works.....	6	Stanciffe Estates Co., Ltd.....	68	Lawrence Machine Co.....	9
Goldie and McCulloch Co., Limited..		Stebbins Engineering & Mfg. Co.....	64	Laurentide Co., Ltd.....	63
H		T		Little, Arthur D., Inc.....	65
Hardy, Geo. F.....	64	Taylor, J. A.....		Lombard & Co.....	
Hay Knife Co., Peter, Ltd.....		Ticonderoga Machine Works.....	10	M	
Hersey, Milton Co.....	65	U		Mackinnon, Holmes & Co.....	13
Hooker Electrochemical Co.....	65	Union Screen Plate Co. of Canada,		Main Belting Co. of Canada Ltd....	60
Huyck, F. C., Sons.....	12	Ltd.....		Marx, J. & Co.....	65
I		Union Sulphur Co.....	18	Meincke, G. A. & Co.....	62
Jeffrey Mfg. Co.....		V		Montreal Locomotive Works, Ltd....	63
Jenssen, G. D. & Co.....	64	Vera Chemical Co. of Canada, Ltd....	6	Moore & White Co.....	15
Jenckes Machine Co.....	14	Voith, J. M.....	12	N	
Johnson & Sons, Ltd., C. H.....	18	W		Noble & Wood Machine Co.....	49
Johnson, Chas.....	4	Wallace, Jos. H. & Co.....	64	Northern Crane Works, Ltd.....	
Jones, E. D. & Sons, Co.....	17	Walmsley, Charles & Co., Ltd.....	4	Norwood Engineering Co. of Can. Ltd	13
Jones & Glassco.....		Waterous Engine Works Co., Ltd....	4	O	
J		Westbye, P. P.....	11	Ontario Pulp Wood Limits.....	56
Jeffrey Mfg. Co.....		Wilson-Paterson Co.....		Ottawa Car Mfg. Co., Ltd.....	9
Jenssen, G. D. & Co.....	64	G		P	
Jenckes Machine Co.....	14	Galt Knife Co., Limited.....	63	Panzl Digester Lining Co.....	7
Johnson & Sons, Ltd., C. H.....	18	Gartshore, Jno. J.....	65	Paper Makers Chemical Co.....	64
Johnson, Chas.....	4	Glens Falls Machine Works.....	6	Parsons Trading Co.....	18
Jones, E. D. & Sons, Co.....	17	Goldie and McCulloch Co., Limited..		Penmans, Limited.....	15
Jones & Glassco.....		H		Pickles, W. F.....	68
K		Hardy, Geo. F.....	64	Prather, H. B.....	64
Kimball H. S.....	4	Hay Knife Co., Peter, Ltd.....		Process Engineers, Ltd.....	65
Klipstein, A. & Co., Ltd.....	7	Hersey, Milton Co.....	65	Provincial Paper Mills Co., Ltd.....	59
L		Hooker Electrochemical Co.....	65	Pullan, E.....	65
Lawrence Machine Co.....	9	Huyck, F. C., Sons.....	12	Pulp & Paper Trading Co.....	
Laurentide Co., Ltd.....	63	I		R	
Little, Arthur D., Inc.....	65	Jeffrey Mfg. Co.....		Rice, Barton & Fales Machine & Iron	
Lombard & Co.....		Jenssen, G. D. & Co.....	64	Co.....	16
M		Jenckes Machine Co.....	14	Riordon Pulp & Paper Co., Ltd.....	66
Mackinnon, Holmes & Co.....	13	Johnson & Sons, Ltd., C. H.....	18	Rolland Paper Co., Ltd.....	66
Main Belting Co. of Canada Ltd....	60	Johnson, Chas.....	4	Rushworth, Wm. A.....	8
Marx, J. & Co.....	65	Jones, E. D. & Sons, Co.....	17	S	
Meincke, G. A. & Co.....	62	Jones & Glassco.....		Sadler and Haworth.....	50
Montreal Locomotive Works, Ltd....	63	J		Sandy Hill Iron & Brass Works.....	17
Moore & White Co.....	15	Jeffrey Mfg. Co.....		Schlick, Leo.....	64
N		Jenssen, G. D. & Co.....	64	Sewall, Jas. W.....	65
Noble & Wood Machine Co.....	49	Jenckes Machine Co.....	14	Scott, Ernest & Co.....	
Northern Crane Works, Ltd.....		Johnson & Sons, Ltd., C. H.....	18	Sessenwein Bros.....	65
Norwood Engineering Co. of Can. Ltd	13	Johnson, Chas.....	4	Sherbrooke Machinery Co., Ltd.....	5
O		Jones, E. D. & Sons, Co.....	17	Smart-Turner Machine Co.....	68
Ontario Pulp Wood Limits.....	56	Jones & Glassco.....		Spielmann Agencies.....	65
Ottawa Car Mfg. Co., Ltd.....	9	K		Stanciffe Estates Co., Ltd.....	68
P		Kimball H. S.....	4	Stebbins Engineering & Mfg. Co.....	64
Panzl Digester Lining Co.....	7	Klipstein, A. & Co., Ltd.....	7	T	
Paper Makers Chemical Co.....	64	L		Taylor, J. A.....	
Parsons Trading Co.....	18	Lawrence Machine Co.....	9	Ticonderoga Machine Works.....	10
Penmans, Limited.....	15	Laurentide Co., Ltd.....	63	U	
Pickles, W. F.....	68	Little, Arthur D., Inc.....	65	Union Screen Plate Co. of Canada,	
Prather, H. B.....	64	Lombard & Co.....		Ltd.....	
Process Engineers, Ltd.....	65	M		Union Sulphur Co.....	18
Provincial Paper Mills Co., Ltd.....	59	Mackinnon, Holmes & Co.....	13	V	
Pullan, E.....	65	Main Belting Co. of Canada Ltd....	60	Vera Chemical Co. of Canada, Ltd....	6
Pulp & Paper Trading Co.....		Marx, J. & Co.....	65	Voith, J. M.....	12
R		Meincke, G. A. & Co.....	62	W	
Rice, Barton & Fales Machine & Iron		Montreal Locomotive Works, Ltd....	63	Wallace, Jos. H. & Co.....	64
Co.....	16	Moore & White Co.....	15	Walmsley, Charles & Co., Ltd.....	4
Riordon Pulp & Paper Co., Ltd.....	66	N		Waterous Engine Works Co., Ltd....	4
Rolland Paper Co., Ltd.....	66	Noble & Wood Machine Co.....	49	Westbye, P. P.....	11
Rushworth, Wm. A.....	8	Northern Crane Works, Ltd.....		Wilson-Paterson Co.....	
S		Norwood Engineering Co. of Can. Ltd	13	G	
Sadler and Haworth.....	50	O		Galt Knife Co., Limited.....	63
Sandy Hill Iron & Brass Works.....	17	Ontario Pulp Wood Limits.....	56	Gartshore, Jno. J.....	65
Schlick, Leo.....	64	Ottawa Car Mfg. Co., Ltd.....	9	Glens Falls Machine Works.....	6
Sewall, Jas. W.....	65	P		Goldie and McCulloch Co., Limited..	
Scott, Ernest & Co.....		Panzl Digester Lining Co.....	7	H	
Sessenwein Bros.....	65	Paper Makers Chemical Co.....	64	Hardy, Geo. F.....	64
Sherbrooke Machinery Co., Ltd.....	5	Parsons Trading Co.....	18	Hay Knife Co., Peter, Ltd.....	
Smart-Turner Machine Co.....	68	Penmans, Limited.....	15	Hersey, Milton Co.....	65
Spielmann Agencies.....	65	Pickles, W. F.....	68	Hooker Electrochemical Co.....	65
Stanciffe Estates Co., Ltd.....	68	Prather, H. B.....	64	Huyck, F. C., Sons.....	12
Stebbins Engineering & Mfg. Co.....	64	Process Engineers, Ltd.....	65	I	
T		Provincial Paper Mills Co., Ltd.....	59	Jeffrey Mfg. Co.....	
Taylor, J. A.....		Pullan, E.....	65	Jenssen, G. D. & Co.....	64
Ticonderoga Machine Works.....	10	Pulp & Paper Trading Co.....		Jenckes Machine Co.....	14
U		R		Johnson & Sons, Ltd., C. H.....	18
Union Screen Plate Co. of Canada,		Rice, Barton & Fales Machine & Iron		Johnson, Chas.....	4
Ltd.....		Co.....	16	Jones, E. D. & Sons, Co.....	17
Union Sulphur Co.....	18	Riordon Pulp & Paper Co., Ltd.....	66	Jones & Glassco.....	
V		Rolland Paper Co., Ltd.....	66	J	
Vera Chemical Co. of Canada, Ltd....	6	Rushworth, Wm. A.....	8	Jeffrey Mfg. Co.....	
Voith, J. M.....	12	S		Jenssen, G. D. & Co.....	64
W		Sadler and Haworth.....	50	Jenckes Machine Co.....	14
Wallace, Jos. H. & Co.....	64	Sandy Hill Iron & Brass Works.....	17	Johnson & Sons, Ltd., C. H.....	18
Walmsley, Charles & Co., Ltd.....	4	Schlick, Leo.....	64	Johnson, Chas.....	4
Waterous Engine Works Co., Ltd....	4	Sewall, Jas. W.....	65	Jones, E. D. & Sons, Co.....	17
Westbye, P. P.....	11	Scott, Ernest & Co.....		Jones & Glassco.....	
Wilson-Paterson Co.....		Sessenwein Bros.....	65	K	



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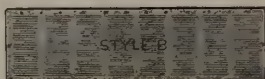
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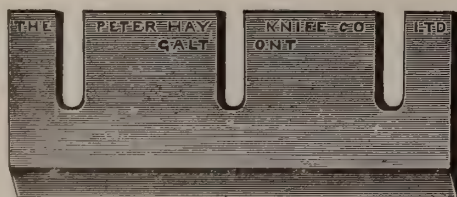
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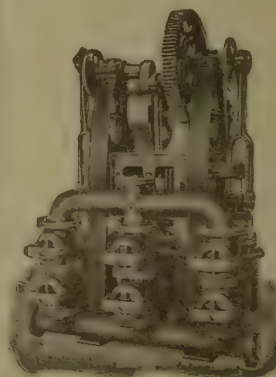


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INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

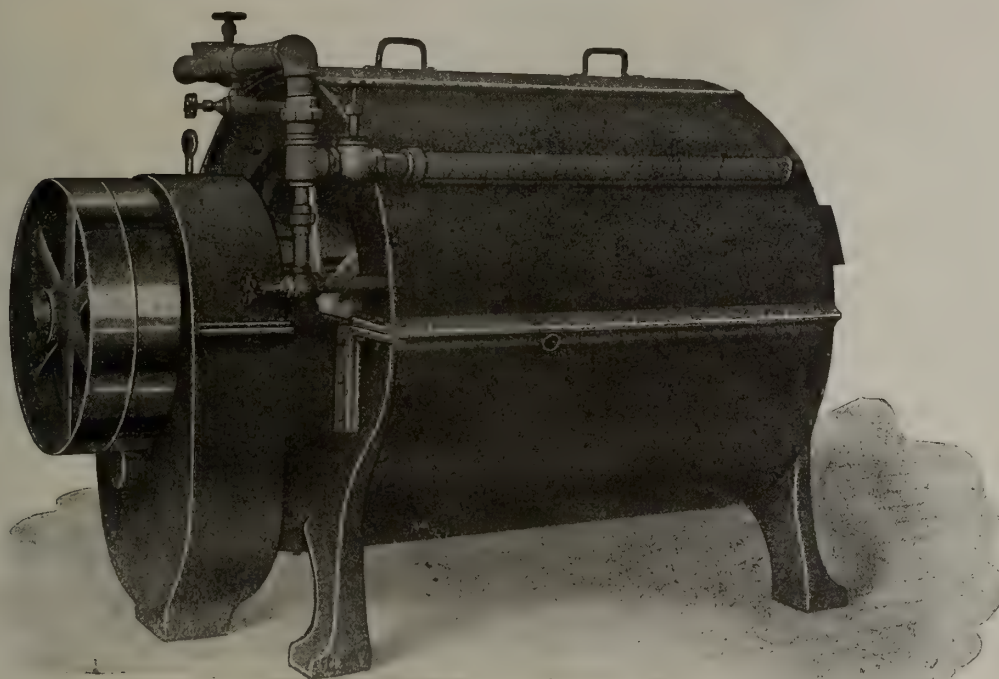
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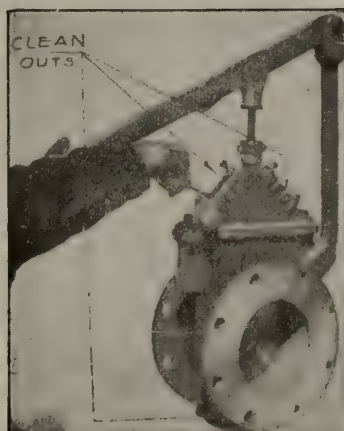
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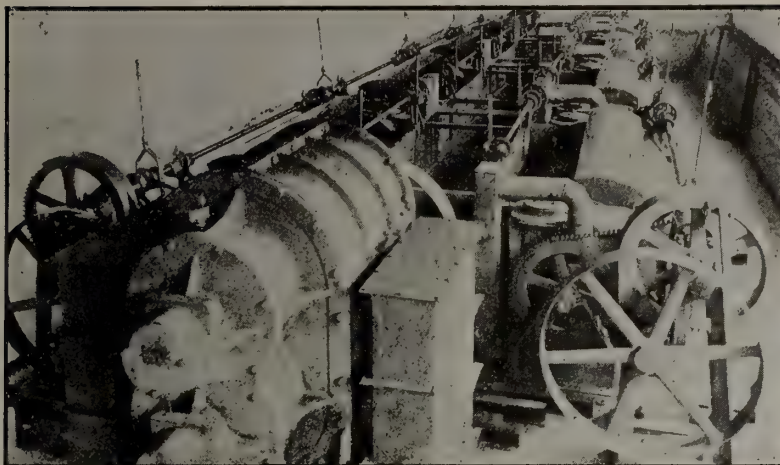
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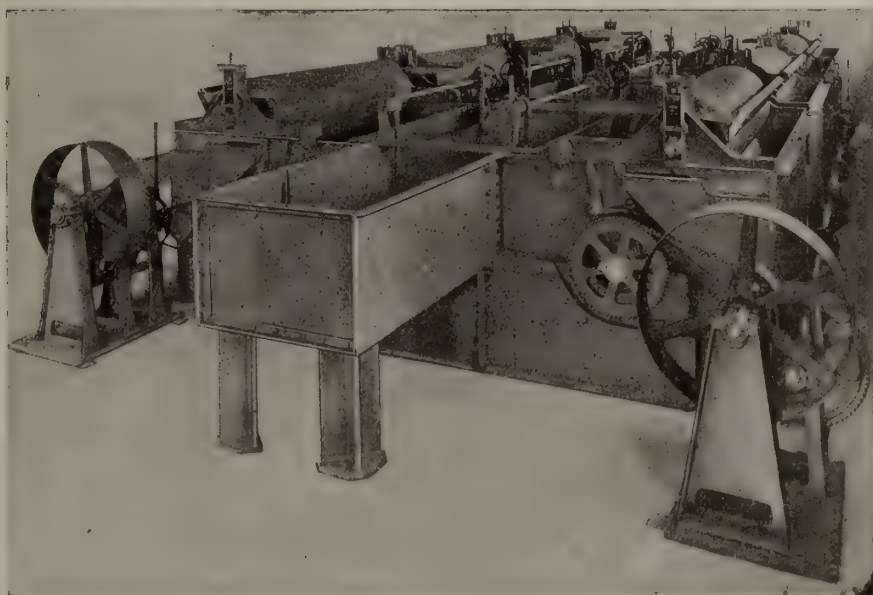
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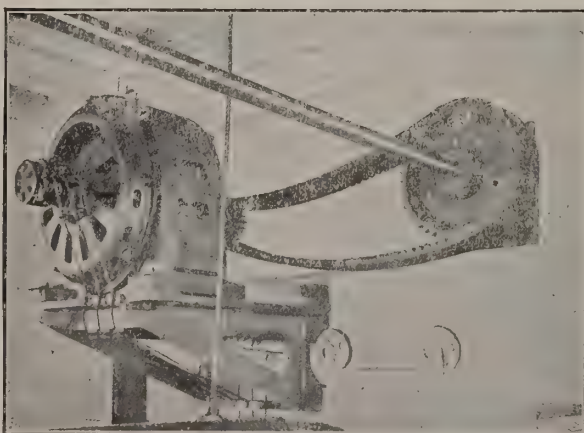


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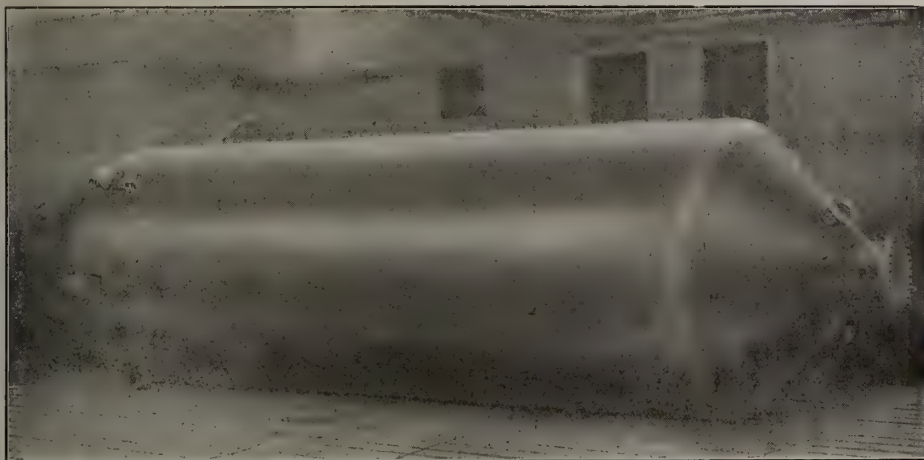
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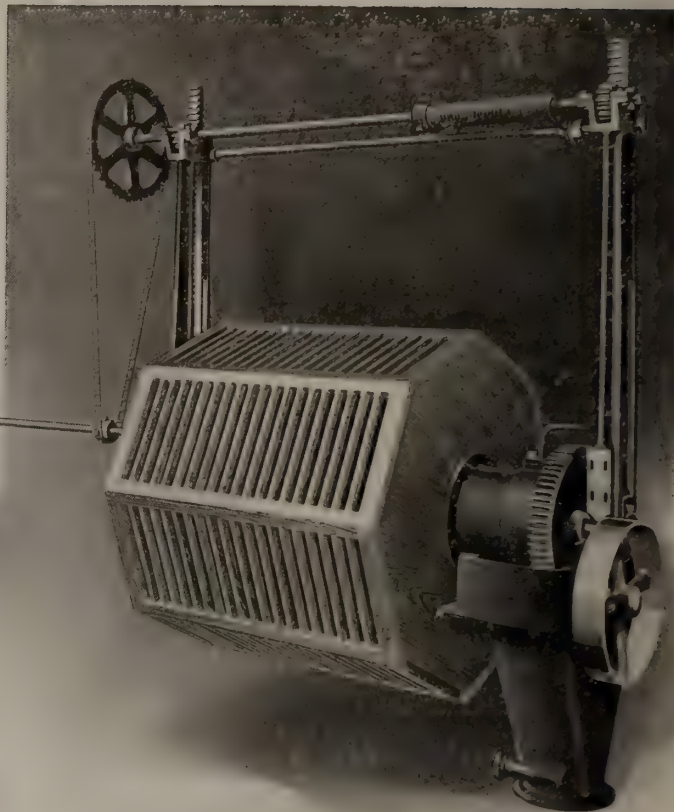
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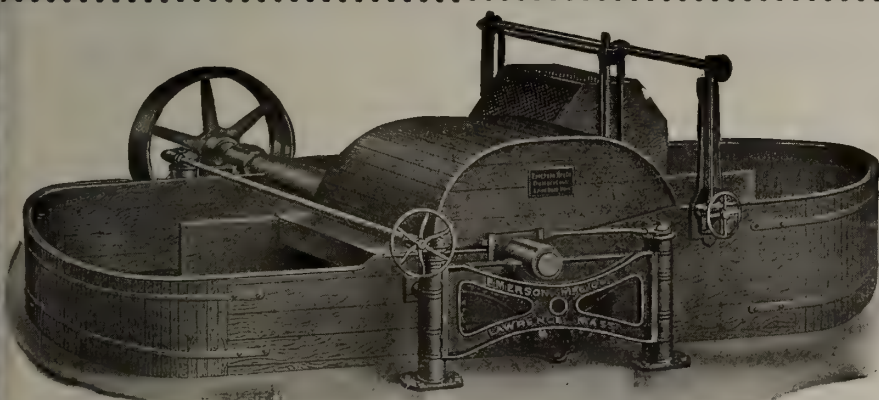
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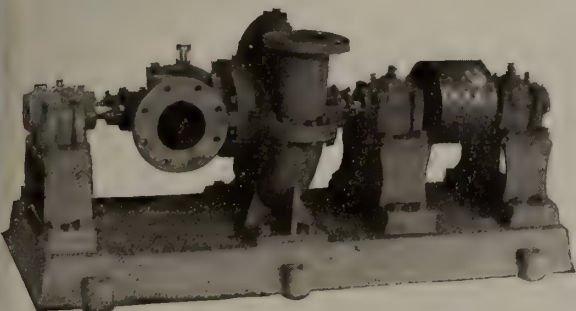
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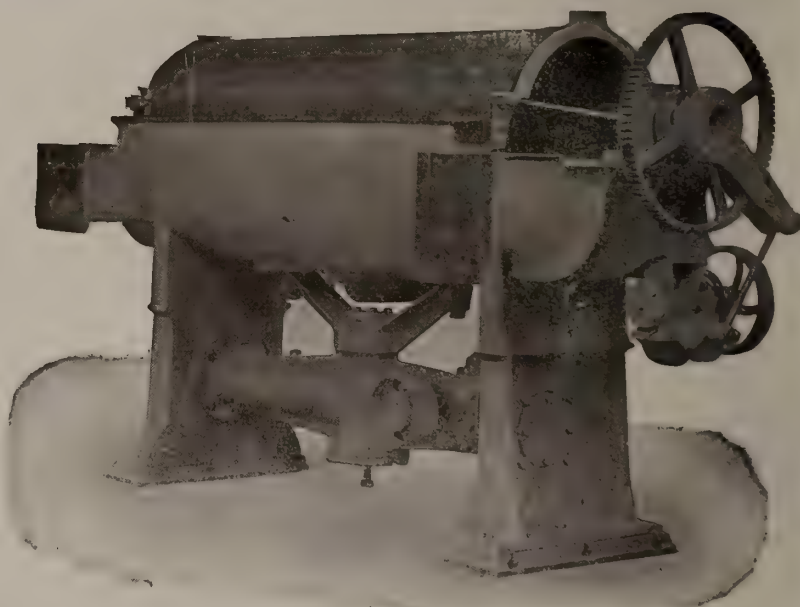
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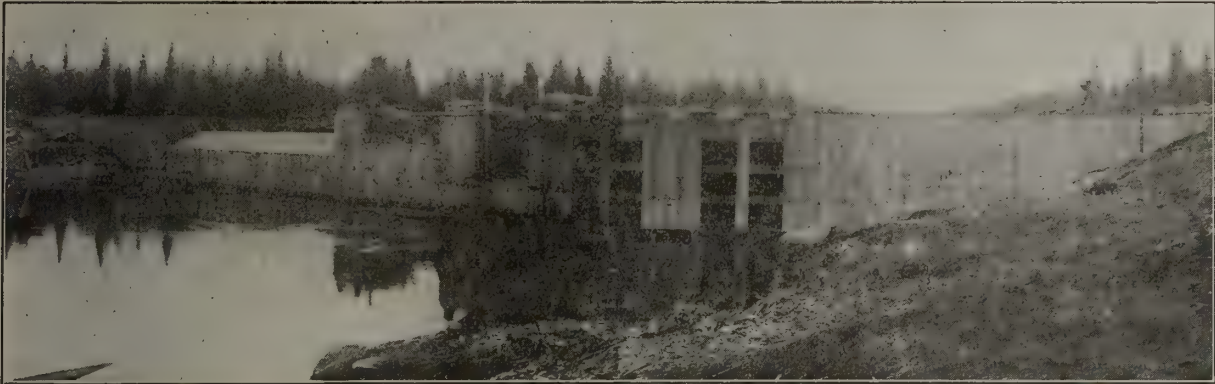
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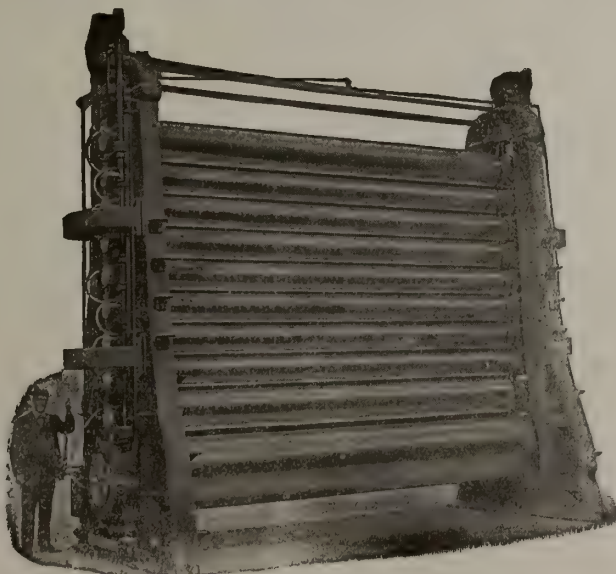
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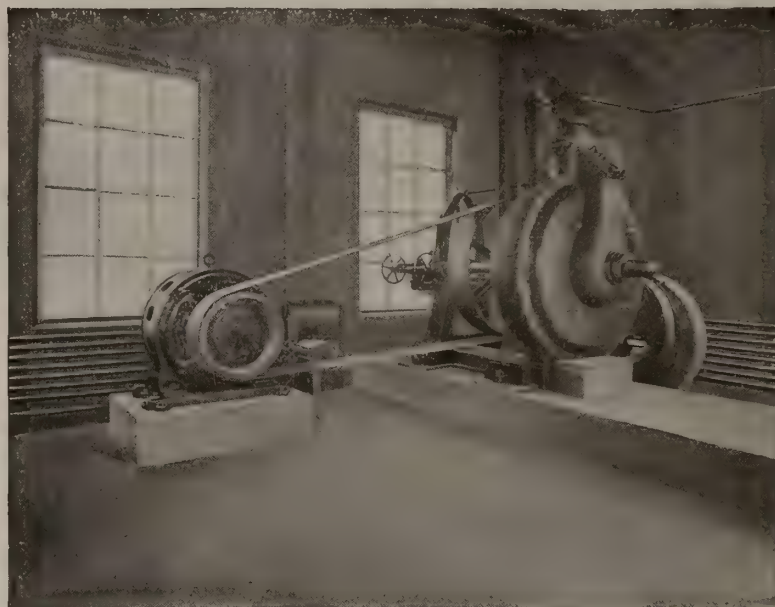
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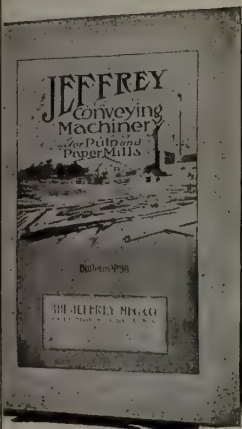
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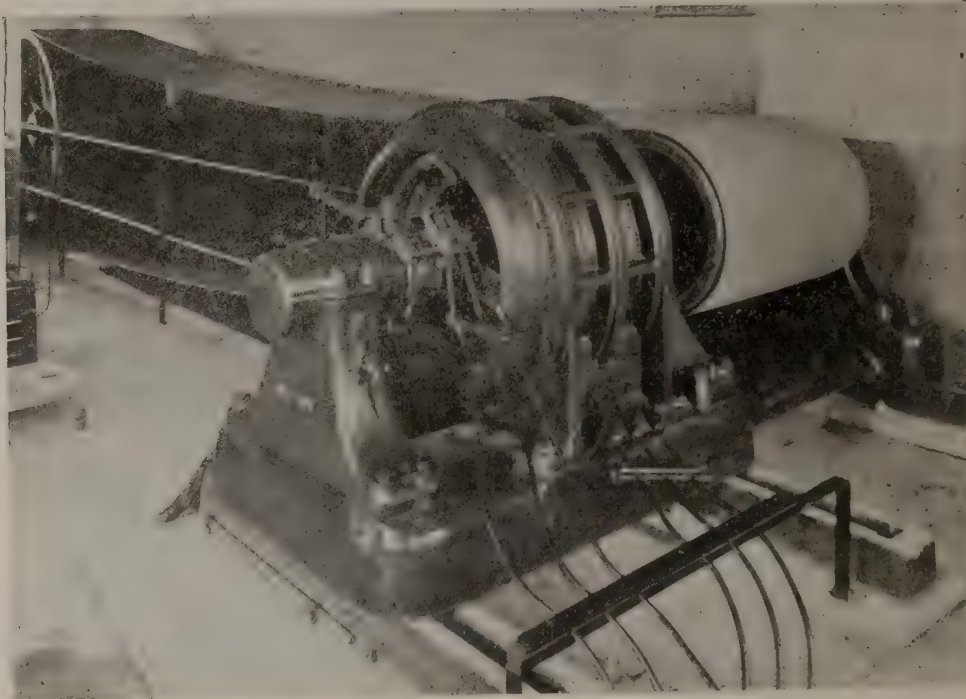
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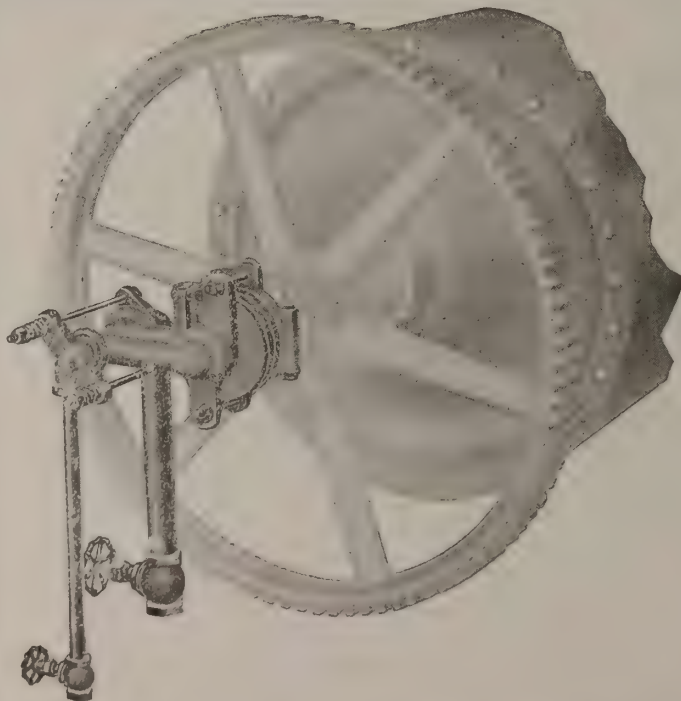
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Send quotation.....

Send Lay Boy

Length of cutter knife.....

Distance between frames

Number of piles to be laid.....

If Longest sheet cut is over 72".....
(This is our standard)

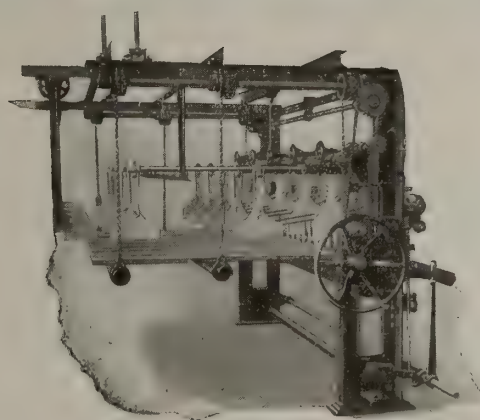
Make of cutter

Hand of cutter

Type of cutter.....

Name of mill

Address



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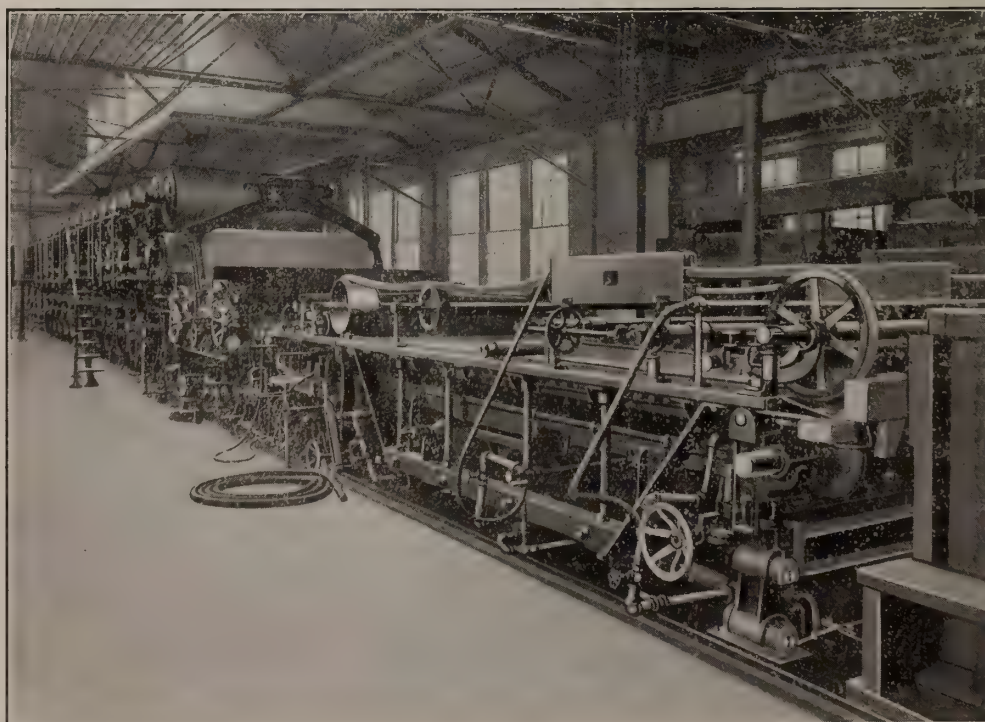
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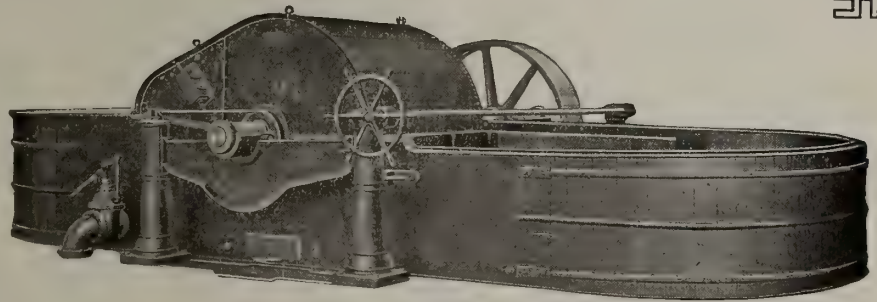
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 Washing Engines Fan Dusters
 Mixing Engines Arm Dusters
 Bleaching Engines Railroad Duster
 Cooking Engines Devil Dusters
 Jordan Engines Wheat's Rag Dusters
 Rotary Pumps Shaftings
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 Canada, they now being the sole manufacturers of the
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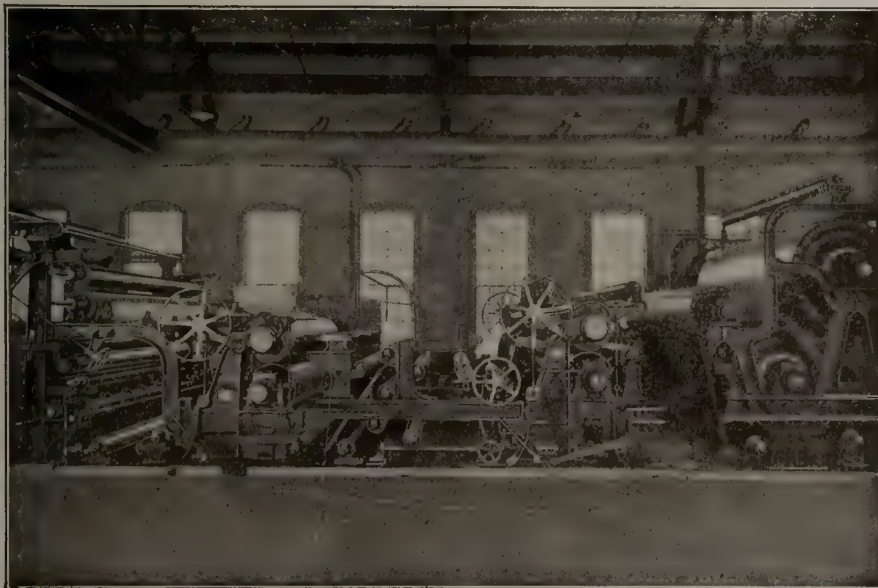
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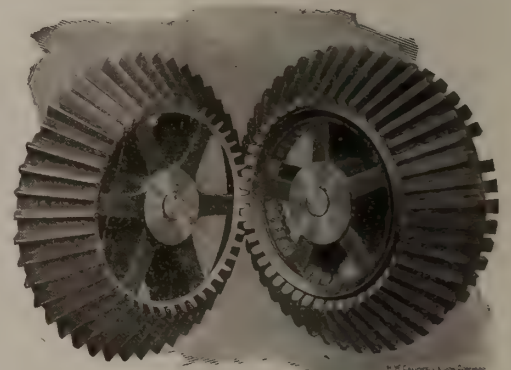
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A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
the Canadian Pulp and Paper Association*

Published by The Industrial and Educational Press, Limited

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SUBSCRIPTION to any address in Canada and Great Britain, \$2.00—United States \$2.50—Foreign \$3.50. Single Copies 20c.

VOL. XIII.

MONTREAL, NOVEMBER 15, 1916

No. 22

Cheap Paper Hurts Publishers

Much has been said and written pro and con regarding the increase in the price of newsprint. The newspaper publishers have gone to Ottawa and made strong representations to the Government, claiming that three cent paper would be their ruin. There are publishers, however, who hold to the view that three cents, or even four or five cents would be the best thing that ever happened the Canadian newspaper constituency.

There is no doubt but that the greatest menace to the prosperity of the Canadian newspaper publisher is the cheap metropolitan paper known as the "dollar daily." For years the great papers in our large cities have sold their periodicals at one cent per copy or \$3.00 a year in cities, but have a large outside circulation for which they get from \$1.00 to \$1.50 a year, or from a third to half a cent per copy. These figures, of course, are perfectly absurd in view of the cost of white paper, the cost of news gathering, ink, labour, and the other raw materials going into the cost of production. These big publishers have been enabled to send out their paper at less than cost because white paper has been obtained at a ridiculously low figure and partly because the larger portion of the burden of carrying the paper's charges has been placed on the shoulders of the advertiser.

We do not know of another commodity sold at less than cost, yet that is exactly what the newspaper publisher, is doing with his paper. The man who buys the modern daily for one cent is buying the cheapest manufactured article known to mankind. If the public were to stop and consider the cost of producing a daily paper, the news gathering agencies, the white paper, ink, metal, the expensive machinery equipment, the salaries, wages, etc., they would readily realize

that they are getting their papers too cheaply.

We are quite convinced that if the publishers everywhere had to pay more for their white paper they would not be so free in giving it away. In other words, three or four cent paper would make our big metropolitan dailies cut off their \$1.00 a year circulation. This would remove the most serious competitors of the small city dailies and the country weeklies. At the present time a paper published say at Kingston or Peterboro has to compete with the big dailies published in Toronto and Montreal. These big papers enjoy dumping privileges, that is, they send out to these outlying towns a large proportion of their circulation at a figure below cost. In ordinary tariff matters dumping clauses are inserted, which prevent foreign manufacturers unloading their goods at less than cost. We should have such a clause in force in regard to the big metropolitan dailies or else force them to cut out their less-than-cost circulation by raising the price of their raw material.

There is not the slightest doubt that the removal of the competition from the big city dailies would make for the prosperity of the smaller publications throughout the country, and at the same time the cost of maintaining the bigger papers would be more evenly distributed between the subscriber and the advertiser. Far from being a panacea for all the economic ills from which the publishers of the country are suffering, cheap paper is one of the prime causes of the small profits which have been made by the newspaper men in the past. By raising the price of newsprint the publishers would be forced to raise their subscription rates and possibly their advertising rates. At any rate they would get over the anomalous position of giving the reading public papers at below cost. It is poor business tactics to sell anything below cost price, but this is what the publishers have been doing.

The Honour Roll

The Secretary of the Canadian Pulp and Paper Association is sending out a letter to the members asking them to correct and revise the Honour Roll which has been appearing in The Pulp and Paper Magazine.

This letter should be heeded and answered by the members of the Association and for its part the Pulp and Paper Magazine will be only too glad to publish the revised names of our heroes.

The industry may well be proud of the splendid showing made by its members. Men high up, from the lowest rung of the ladder, and all grades between, have gone forth to fight for King and country. Many of them have made the Supreme Sacrifice, have enriched the fields of France and Flanders with their warm red blood and transformed the purely commercial side of our industry into one redolent with the fragrance of patriotism and unselfish devotion to a great cause. Let us not fail to honour our heroes — both the living and the dead.

"Lest We Forget"

The newspaper publishers continue to state that the newsprint manufacturers are arbitrarily raising the price of paper. They repeatedly claim that there is no justification for the advances asked by the manufacturers.

"Lest we forget" that paper is only one of many commodities to advance it is well to remind the public that flour is at a price only surpassed once in the history of the continent—just after the close of the Civil War. Cotton, the poor man's silk, is at a new high level, while shoes and scores of other necessities are all high and appear to be going higher. Why then should the public expect to get paper at pre-war prices?

We have frequently pointed out that makers of paper machinery in England are now making munitions, that the newsprint manufacturer as a buyer of copper wire must compete in the world's market with the unlimited purses of the warring nations, and the same is true of felts, casein, chemicals and all the other raw materials entering into the manufacture of paper.

In addition to that, Europe—formerly the chief paper centre of the world is out of the market and to-day neutral countries must turn to Canada and the United States. Combined with these facts are increased freight rates, heavier insurance charges and higher wages to laborers.

The following list of papermaking materials with their advance in price is taken from the New York Sun, which cannot be accused of holding a brief for the manufacturers:—

	August 1914.	Recent 1916.
Alum, lb	\$.01	\$.45
Bleach, lb . . . . .	.01½	.13½
Fourdrinier wires, sq. ft. . . . .	.29	.39

Lumber, M. ft.	13.00	18.50
Bleached sulphite, cwt.	2.65	4.50
Thirds and blues, rags, cwt.	1.35	2.12½
Aniline, lb . . . . .	.40	20.00
Soda ash, cwt. . . . .	.65	4.00
Magazine stock, cwt.	1.00	1.35
Rosin, bbl.	3.75	5.70
Satin white, dry, lb . . . . .	.05	.09
Casein, lb . . . . .	.06½	.30

The one thing that can happen in these circumstances is for prices to rise and to continue rising. When there is not enough of things to go around it always is the highest bidder who gets what he wants. The rest of the world has to go on short rations. This is exactly what is taking place."

The list of commodities furnished by the Sun is a modest one and in many cases the advances quoted are far below the real figures, but the list is sufficiently long and illuminative to convince all reasonable people that "There's a reason" for the advance in the cost of paper.

Toothpicks to Cost More

During the past few months we have grown accustomed to the mounting cost of commodities. First one necessity and then another passed from the realm of everyday use into the luxury class. For the most part we bore these privations with a stoicism worthy of the ancient Spartans, but there are limits to human endurance and in our humble opinion the end has been reached.

Toothpicks have now advanced in price! To 'Sassoity' such an announcement may not mean much but to the great lumbering fraternity and many others it is fraught with serious consequences. Those of us who were wont to dine a la carte—from a quick lunch counter, and then as we paid our meagre bill helped ourselves to a supply of succulent toothpick the elimination of this forest product will seriously affect the processes of thought. How many great plans have been evolved as the thinker ruminated while quietly plying a toothpick between his molars! What dentists bills have been garnered from this First Aid to the profession! What rakish dare-devil appearance toothpicks projecting from the corner of the mouth at an angle of forty-five degrees have caused! And now this aid to meditation, this adjunct to the lunch counter and the dentists' friend is to be removed from the free list and be paid for like roast beef or baked beans.

Further, lumbermen, as well as pulp and paper makers are likely to find a fresh storm bursting around their devoted heads. Already they have been blamed for increasing the cost of lumber and newsprint, but these offences against society are as nothing compared to raising the cost of that most important and indispensable by-product—toothpicks. Perhaps the soaring prices of foodstuffs indicates that there will soon be no need of toothpicks anyhow.

BROMPTON PULP AND PAPER COMPANY RE-ORGANIZES.

A re-organization of the Brompton Pulp and Paper Company, has taken place, new capital has been secured for extensions, additional directors added to the board and the stock which was formerly held as a close corporation has been listed on the local exchange.

The company has always been carefully and conservatively managed but it is now believed that the additional capital will permit of very much larger earnings. The company has always been a large producer of ground wood pulp and the second largest producer of Kraft pulp in the Dominion. Newsprint and box board are also manufactured, and a considerable business carried on in lumber.

The company owns 179,329 acres of free hold timber lands and controls by lease from the Province of Quebec 107,477 acres of Crown lands situated on the St. Francis River. The limits are conservatively estimated to cut 2,700,000 cords of pulpwood and 350,000,000 feet m. of saw logs, also an unlimited quantity of hard-



F. N. McCrae, M.P., President Brompton Pulp and Paper Company.

wood. The company practically controls the river above their mills.

The plants are located at East Angus and Brompton. At the latter point they operate a large ground wood pulp mill and at East Angus, 15 miles from Sherbrooke, a wood pulp mill. Kraft pulp and paper mills, box board mills and newsprint mills.

Waterpowers comprise two developments on the St. Francis River, one with a head of 28 ft. and a minimum developed horse power of 4,000 and a maximum of 6,000, and the other with a head of 22 feet, a minimum development of 2,500 h.p. and a maximum of 4,400 h.p. At Brompton the company has developed and in operation a waterpower was a 38 feet head, a minimum of 6,000 h.p. and a maximum of 10,000 h.p.

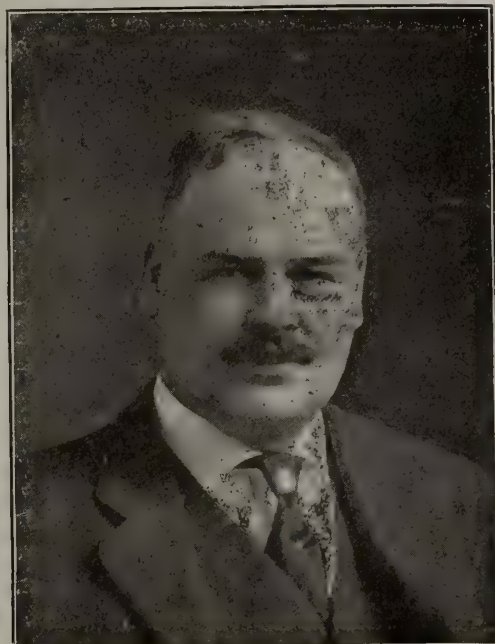
The annual output of the company at the present time consists of 30,000 tons of ground wood pulp, 16,500 tons of newsprint, 12,000 tons of Kraft paper, 9,000 tons Kraft and fibre paper, 10,500 tons of box-

board, 15,000,000 feet of lumber, 5,000,000 shingles, 30,000 railway ties and 1,000,000 feet mis. timber.

This output is being increased by 15,000 tons of newsprint, the new mill being ready next year, The ground wood pulp output is to be increased by 15,000 tons, and the boxboard plant by 5,000 tons.

The fixed assets are shown as \$9,000,000, and liquid assets of about \$1,100,000. Last year the company earned \$650,000 net before preferred dividends, which would be equal to about 5½ per cent on the seven million of common.

Earnings for next year are estimated at between



J. A. Bothwell, General Manager Brompton Pulp and Paper Co., whose securities will shortly be listed on the Montreal Stock Exchange.

two and a half and three million or about 28 per cent on the \$7,000,000 common.

F. N. McCrae, M.P., Sherbrooke, is the president, other directors include E. W. Tobin, M.P., W. N. Munroe, president Odell Paper Co., J. N. Greenshields, H. W. Beauclerk, and J. A. Bothwell. Two additional directors are to be named later.

The new company will have a total authorized capital of \$9,000,000 stock of which \$2,000,000 will be preferred and \$7,000,000 common. Ahead of that stock will be an issue of \$2,000,000 bonds.

THE WHITE PINE BLISTER.

Declaring that white pines valued at \$261,000,000 are threatened with destruction by the white pine blister rust, the American Forestry Association has sent a warning broadcast throughout the United States and Canada urging that every precaution be taken to prevent the spread of the disease, which has already found a secure foothold in New England and other eastern states and in Canada. The disease is already progressing in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Wisconsin, Minnesota and in the provinces of Ontario and Quebec in Canada. The white pines in New England are worth \$75,000,000; in the lake states \$96,000,000; in the western states, \$60,000,000; and in national forests, \$30,000,000, or a total of \$261,000,000.

The Honour Roll

Members of the Pulp and Paper Industry who have Enlisted for Overseas Service

The Abitibi Power and Paper Co., Limited.

CHRISTOPHER H. "CHARLIE" DAWSON.
WM. SMITH.
WM. DONOHUE.
Corp. EARL J. WILSON.
GEO. ALBERT BROWN.
C. V. PERRY.
Sergt.-Major E. C. MORRIS.
Sapper L. A. SWEEZEY.
JAMES BEGGS.
I. MacDONALD.
J. LACHAPPELLE.
PAUL D. HAYWARD.
ROY R. POINTER.
GEO. PHILLIPS.
N. TRIPP.
J. DONELL.
LEN. COLEMAN.
F. A. CRAMP.
BEN HORNE.
J. H. ANSEN.
H. MAINVILLE.
R. CLARKE.
W. COUILLARD.
W. DINSMORE.
LOUIS McKEE.
ROSS BEATTY.
J. P. SMITH.
HUGH RITCHLEY.
CAPT. W. H. YOUNG.
EDWARD KELTY.
HARRY PELLY.
JOSEPH JOHNSTON.
TONEY FRAUKEN.
OSCAR DUPONT.
FRYNK STARKNICK.
TONY CONTRATUCK.
GEO. MINER.
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JOSEPH RHEAULT.
ALEX KALIBITK.
PIT DEDYRKENZO.
THOMAS EDWARDS.
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WM. O'FLAHERTY.
GAVRIL KOLAMACK.
JOHN FISHER.
A. DUFFY.
ELIA LUCASHEVICH.
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ALDERIC BROUSSEAU.
ARMINGLE LAPRIE.
JOS BOND, Sr.
JOS. BOND, Jr.
OCTAVE CLEMENT.
HENRY JOS. LAVERGNE.
CLEMENT LATENDRESSE.
ALFRED LARIVIERE.
A. McEACHERN.
Lieut. GRAHAM HENNESSY.
Private R. J. MORROW.
Sergeant IRVINE FOY.
JACK LEONARD.
DOMINICK FLAHERTY.
CARL ANDERSON.

Beveridge Paper Co., Ltd.

Q.M.-SGT. ROBT. McCARTHY.
WALTER NORTON.
WILLIAM EDWARDS

Bird and Son.

JAMES BOATH.
WILLIAM NUNN.

WILLIAM SMYLIE.
JACK MOLL.
JOHN SCOTT.

The Bronson Company.

Lieut. H. A. REIFFENSTEIN.
J. P. JOHNSTON.
ALLAN DEMPSEY.

Brown Corporation.

FRED WYKES.
HARRY BAILEY.
T. WOODING.
A. WOODING.
ASHLEY STEVENS.
FRED BERTRAND.
N. LAVIGUEUR.
R. A. FAIRBAIRN.
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HOWARD SMITH PAPER COMPANY EXPANDS.

The Howard Smith Paper Company, has not only acquired the plant of the Edwin Crabtree Sons, Limited, but are planning to increase the capital stock of their company in order to permit them to expand still further.

A few days ago the Howard Smith Company, paid 7% back dividends on their preferred stock. The company started operations in 1914 and the dividends on the preferred were to accumulate from that date, so that at the end of the present year three years would have accumulated of 21 per cent. The present dividend, which is payable December 1st to stock record of November 21st, will leave 14 per cent. still due.

A special general meeting of the shareholders will be held on November 15th to authorize the acquisition of the properties and contracts of the Edwin Crabtree Sons, Limited, at Crabtree Mills, Que., for which payment will be made partly in cash and partly in common stock and bonds.

At the same time authority will be asked to increase the capital stock for an unstated amount as well as the creation and issue of \$150,000 bonds, and to increase the board of directors.

The shareholders are being asked to subscribe for the common stock at 80. The amount outstanding is \$525,000, while the preferred amounts to \$475,000. The common has been a feature of the curb market recently, and about the highest quotations so far recorded have been 73 to 75.

The directors of the company are C. Howard Smith, president; John C. Newman, vice-president; H. C. Courtney, J. W. Pyke, J. J. M. Pangman, D. W. Campbell, J. Alex. Cameron.



Howard Smith, President, Howard Smith Paper Co., which has made a stock new issue in payment of the Edwin Crabtree Sons' Mills, recently taken over.

SOME WORDS ABOUT ACID MAKING FOR THE SULPHITE PULP PROCESS

By M. HIRSELL, Chemical Engineer, Bathurst, N.B.
(Specially written for Pulp and Paper Magazine).

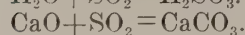
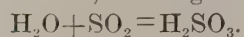
In the making of bisulphite liquor for the manufacture of sulphite pulp there are two essentially different methods employed. In one method the raw material used to furnish the base of the sulphite liquor ("the acid") is ordinary rock of lime ("Limestone"), CaCO_3 , while in the other method the raw material is burned lime CaO . With either methods the quality of the acid produced is about the same and its purity depends in both cases on the purity of the raw material used, be it either Calcium carbonate or Calcium oxide. If the limestone is impure the impurities will be carried along into the acid, and the same thing will occur in the limewater method, that being true for all the various systems to-day employed for either methods. Of course, such impurities as sand, which is really harmless, may be more or less effectively trapped before entering into the storage tanks, but that process will be the same in both methods.

In either method the resulting "raw acid" will contain too low an amount of free SO_2 to make it a good material for cooking acid, unless the mill is cooking dry wood, which is very seldom the case on this continent. With both methods therefore some extra means are employed to enrich the raw acid in free SO_2 . The methods used for that purpose are principally the same for both the limestone and the limewater systems, viz., running the system acid over woodblacks, clincker or coke or any other substance that will not be affected by the raw acid; and letting the fresh SO_2 -gases from the sulphur burner pass through the same, on the principle of opposite travel, before entering into contact with the active bases. In that way the raw acid may be enriched to practically any desired strength before entering the storage tanks, if proper arrangements are employed.

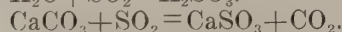
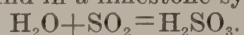
The object of this article is not to deal in detail with the various systems employed in acid making, either with the limestone or the limewater systems. Its purpose is only to deal with a peculiar feature, hitherto to my knowledge never touched upon in the literature of acid making, that takes place in the chemical reactions in both systems, viz., the heat of reaction, or the increase in temperature of the acid due to chemical reactions.

It is well known that in every chemical reaction a change in temperature of the employed agencies takes place, so that the temperatures of the end products will be either more or less than the temperature of the agencies before the reaction. In regard to this the limestone and limewater systems will show a noticeable difference in the temperature of the finished acid, as will be shown from the following series of deductions:

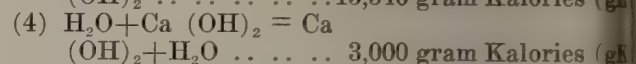
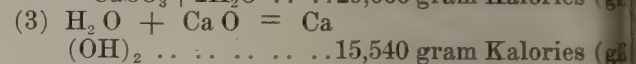
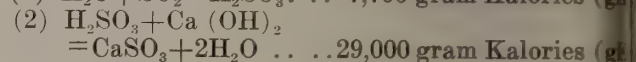
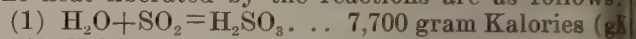
In a limewater system we have the following chemical reactions, starting with slaked lime diluted with water:



And in a limestone system:



The heat liberated by the reactions are as follows:



Assuming that the CaO is slaked, suspended in water and cooled down to the same temperature as the existing water and that the finished acid has the following composition:

Total: SO_2 —4.00%.

Free: SO_2 —2.40%.

Combined: SO_2 —1.60%.

One liter of acid with 1.60% combined SO_2 contains 16 gram combined SO_2 and 24 gram free SO_2 .

As before, we have: $\text{H}_2\text{O} + \text{SO}_2 = \text{H}_2\text{SO}_3$, 7,700 gK and $\text{H}_2\text{O} + \text{SO}_2 + \text{Ca}(\text{OH})_2 = \text{CaSO}_3$

$2\text{H}_2\text{O} = 7,700 + 29,000 \text{ gK} \dots 36,700 \text{ gK}$

As the molecular weight of $\text{SO}_2 = 64$ we get the following amount of Kalories liberated in making 1 liter of acid:

For the free SO_2 24/64-7,700 gK. = 2,890 gK

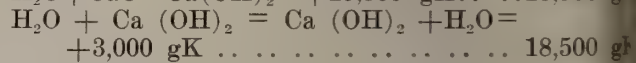
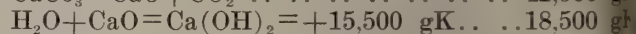
and for the Comb. SO_2 16/64-36,700 gK = 9,170 gK

Summary 12,060 gK

the heat that raises the temperature of 1 liter of acid 12.06 Centigrade.

Limestone System:

The heat involved in the reactions for bringing the limestone to a thermic position, where it can combine with SO_2 is as follows:



Summary 24,000 gK

And as before $\text{H}_2\text{O} + \text{SO}_2 = \text{H}_2\text{SO}_3 \dots 7,700 \text{ gK}$

and $\text{H}_2\text{O} + \text{SO}_2 + \text{Ca}(\text{OH})_2 = \text{CaSO}_3$

$+ 2\text{H}_2\text{O} = 7,700 + 29,000 \text{ gK} \dots 36,700 \text{ gK}$

Accordingly there is for the combined part of the acid with a limestone system liberated:

$36,700 - 24,000 \text{ gK} = 12,700 \text{ gK}$, and the evolution of heat in making 1 liter of acid becomes:

For the free SO_2 24/64 7,700 gK. 2,890 gK

and for the Comb. SO_2 16/64 12,700 gK. 3,175 gK

Summary 6,065 gK

the heat that raises the temperature of 1 liter acid 6.06 deg. Centigrade. Accordingly we get with a limewater system a raise in temperature of 12 deg. C., and with a limestone system a raise of 6 deg. C. theoretically. This being when assuming that the lime is thoroughly slaked and cooled down to the same temperature as the water before the beginning of the acid making. If the lime is not thoroughly slaked, and in case steam

s used, it will raise the temperature still higher.
The theoretical heat involved in the slaking and diluting process is as follows:
 $\text{CaO} + \text{H}_2\text{O} = \text{Ca}(\text{OH})_2 \dots\dots\dots 15,540 \text{ gK.}$
 $\text{H}_2\text{O} + \text{Ca}(\text{OH})_2 = \text{Ca}(\text{OH})_2 + \text{H}_2\text{O} \dots\dots 3,000 \text{ gK.}$

Summary $\dots\dots\dots 18,540 \text{ gK.}$
Taking the above example of an acid with 1.6% combined $\text{SO}_2 = 1.4\%$ CaO we have 14 gram CaO per liter acid.
Molecular weight of CaO—56
thus $14/56 \cdot 18,450 = 4,612 \text{ gK.}$ and the raise in temperature by slaking, 4.6 deg. Centigrade. Part of that heat is, of course, carried away during the slaking process. In practice the raise in temperature by slaking is about 2 deg. C. The total raise of temperature in the limewater process is accordingly $2 + 12 = 14 \text{ deg. C.} = 25.2 \text{ deg. Farenheit,}$ and for a limestone system:
 $6 \text{ deg. C.} = 10.8 \text{ deg. Farenheit.}$

These figures also conform with what is found in general practice.
As shown by the foregoing, the difference is not so very great, and for most of the time of the year entirely negligible. Also, several mills have provided themselves with springwater of sufficiently low temperature to counteract the trouble due to the high temperature of the finished acid in summertime. But where the mills has resource to only river water, which may sometimes in the summer run as high as 22 deg. C. (72 deg. F.) or more, the high endtemperature is quite sufficient to cause considerable trouble in the acid department, as the absorption of SO_2 -gas is becoming very low when the temperature has passed the 32 deg. C. (89 deg. F.) mark. In that case it will be found that a limewater system will be at a disadvantage in comparison with the limestone system. As the initial outlay for installment of the different systems and the power consumption does not materially differ, it is simply a local question regarding the price of raw materials which system will be most economical in operation. As consumption of limestone compared with the consumption of burnt lime is in the ratio of 100:56 it will be seen that a mill using for ex. 350 lbs. of limestone per ton of pulp produced would have to use 196 lbs. of burned lime to make the same strength of acid. If a certain percentage of Magnesia also is present in the bases, the relation will change accordingly.

The last figures are only theoretical as there is generally more waste with burned lime than with limestone, especially if the lime is poorly burned or has become airslaked.

MORE PULP EXPECTED TO GO TO ENGLAND.

In consequence of the fact that the British Admiralty has undertaken to provide tonnage for the conveyance of wood pulp from Canada to England, it is expected that there will be a considerable increase in the export of pulp to England in the near future.

MacGREGOR-HARKNESS PAPER CO.

The wholesale paper business in Montreal, formerly carried on by John R. MacGregor, has been taken over by Mr. MacGregor and Thomas Harkness and is now conducted under the name of the MacGregor-Harkness Paper Company.

CANADIAN PULP FOR FRANCE.

According to Philippe Roy Canada's trade commissioner in Paris there are opportunities for supplying France with Canadian pulp, both mechanical and chemical.

The French industry of paper manufacture depends upon foreign countries for its supply of chemical and mechanical pulp. Its requirements are supplied by the countries producing woodpulp, Sweden, Norway, Austria-Hungary and Germany. The imports during the year 1913 amounted to:

Mechanical pulp, tons.	260,000
Chemical pulp, tons	205,000
Valued, according to 1913, as follows:	
Mechanical pulp, francs	35,000,000
Chemical pulp, francs.	60,000,000

Germany and Austria only appear for 26,000 tons of mechanical pulp, but the imports of chemical pulp from these countries amount to 66,000 tons, of a total value of 20,000,000 francs. The increase in imports of chemical pulp from Germany was particularly rapid; indeed, from 18,000 tons in 1894 it reached 66,000 tons in 1913. The German and Austrian forests cannot now supply in full the pulp mills of these two countries, which make up a good part of their need from the lumber of Finland. Finland, which already has a few chemical mills, can extensively develop this industry. Canada owns inexhaustible forests and can, like Finland, considerably develop the manufacture of chemical pulp. These two countries can assure all the requirements of the allied countries importing woodpulp if they find themselves protected against the competition of the Central Empires. We recall below the means which we have indicated to the Canadian Trade Commission as likely, in our opinion, to favor the development of the production of woodpulp in Finland and Canada, as well as in the allied countries.

- 1.—Enactment of export duties in Finland and Canada on lumber intended for the Central Empires.
- 2.—Enactment in allied countries importing pulp, of special customs duties against pulp coming from the Central Empires.

NEW ZEALAND PAPER IMPORTS.

New Zealand imported nearly a million and a half dollars worth of paper during the first eight months of the year according to W. A. Beddoe, Canadian Trade Commissioner at Auckland, New Zealand. The imports of printing and other paper into that country for the first eight months of this year were valued at \$1,417,844, comparing with imports of the same material for the corresponding period a year ago valued at \$1,121,635. The increase is \$296,209.

CANADA'S PAPER EXPORTS.

Canadian mills produced in 1915, 503,285 tons of newsprint paper and exported in the same period about 400,000 tons. During the fiscal year ending March 31, 1916, Canada increased her exports of paper by about \$5,000,000. During the twelve months ending June, 1916, Canada's exports of newsprint were valued at \$21,250,296 of which \$17,759,018 went to the United States and the remainder to Great Britain. During the previous year the exports were valued at \$16,200,635.

RE-ELECTION OF PRESIDENT WILSON IS AN INCENTIVE TO EXTEND THE CANADIAN INDUSTRY.

(Special to Pulp and Paper Magazine).

NEW YORK, N. Y., Nov. 13th.

The re-election of Woodrow Wilson to the presidency of the United States, it is conceded by local pulp dealers and importers and newsprint manufacturers, should prove a great incentive for Canada to extend herself in her work of increasing the production of these products. Nothing can be regarded as being more beneficial to the development of the industry in Canada than the fact that the Democratic administration in the United States is now assured for the next four years. The chief and practically only issue of the campaign of candidate Hughes was a protective tariff, the enforcement of which would most certainly have limited Canadian activities in the United States, so far as the sale of paper and paper products were concerned. Mr. Wilson, however, is known as an out-and-out free-trader—a man who is utterly upposed from the most sincere convictions to the policy of a protective tariff. During the past four years, he has shown just how he feels in regard to this matter, so there can be doubt as to where the country will stand. It is true, the duties to be imposed on goods imported into this country will be regulated in the future, by a tariff commission which is to be appointed within a short time. This is to be a non-partisan commission—so they tell us. But, despite this fact, it is believed that because of the president's pronounced attitude in regard to free-trade, the tariff body will not dare to even suggest a policy nearing to what is commonly called Protection.

At this stage, when Canada has embarked on an era of mill construction and a general movement to increase its production of pulp and paper, the news of the election results must be very welcome to those who are promoting these projects and the Canadian industry in general. There is now nothing to stop the progress—nothing to cause worry regarding the future relations of the two great North American nations.

It will be interesting for Canadians to learn that the entire trade has been sorely disappointed over the results of the election. Despite the comment, which was common some months ago, that newsprint and pulp manufacturers were no longer interested in seeing an import duty placed on goods coming from the Dominion, everything, possible was done by members of the trade to further the chances of Charles E. Hughes for becoming president. In New York, the Hughes Campaign Club of the Paper and Allied Trades was formed. Large sums of money were contributed and several demonstrations were given to show that the Republican candidate was the logical man for the office. In each of the paper making centers, feeling for Mr. Hughes was strong and generous support was given him—only because he favored a protective tariff.

The cause for this sentiment urging Protection can readily be understood. Thousands of dollars have been spent in this country within the past eight months in the renovation of mills, the installation of new machinery and in other means for increasing production. Some manufacturers have been experimenting on paper specialties formerly obtained from Europe.

Just now, some of the papers are being marketed successfully—at a cost considerably higher than the prices asked by the foreign makers. In order to hold this trade after the war, it would be necessary to guard against unfair competition from Europe.

With regard to newsprint, somewhat the same fears were conceived. The production of news is now at its greatest mark. Immense capital for the construction of new news mills was withheld until after the election, its utilization pending entirely on the possibility of securing protection. The present attitude regarding new construction was well expressed by a leading manufacturer whom your correspondent interviewed. He said: "You won't see any more newsprint mills built in the United States during the next four years. And it isn't very likely that the pulp men will dare to do much in the way of increasing production. There is bound to be a sudden cessation to the remarkable demand which has so upset the market for the past several months. It may take a few years before this change will occur, but it is due and every manufacturer knows it and fears it.

"The one big thing which is then anticipated is an overproduction. With machines in this country going at capacity, with Canada supplying one-third of the newsprint consumed in the United States and willing to supply more, and with the likelihood that Sweden will send considerable news here after the war, it does not look bright for American investments. It was to secure domestic trade after the war and to insure that any new construction would not prove a loss, that the paper trade fought bitterly to force the Republican Party into power. But the struggle was a failure, the Democrats were victorious and the policy of free trade is assured for the coming four years.

And this is Canada's opportunity. It means to her that there will be no material increase in the production of newsprint in the United States for sometimes which in turn means that there is good reason to bid for trade in the United States for there is good opportunity to expand sales in this direction.

At this particular moment, there are rumors that England will requisition the great part of the Canadian output of pulp and paper. In such an event the United States would suffer severely for it cannot afford to miss the supplies coming from the Dominion. With an increased production, however, it would be possible to take care of the English needs and still exploit the American field.

It is now within Canada's grasp to become the greatest pulp producing country in the world. The United States manufacturers realize this and, because of the likelihood of a continued low or free tariff, are not anticipating extending plant to compete with their industrial brothers of the North.

ROWLAND W. JOLLY.

**REMEMBER THE MEETING OF THE
TECHNICAL SECTION OF THE CANADIAN
PULP AND PAPER ASSOCIATION WHICH
WILL BE HELD AT THE RITZ-CARLTON
HOTEL, MONTREAL, NOVEMBER 24TH
AND 25TH.**

THE NEWSPRINT INVESTIGATION.

In a statement announcing the virtual completion of its investigation of newsprint paper prices, the United States federal trade commission declares that during first half of this year, when prices already were soaring to unprecedented figures, average cost of producing newsprint paper in domestic mills was less than \$1.65 per 100 pounds, or below the average cost in the last three years. Contract prices rose this year from less than \$2 per 100 to \$3 and \$3.50, and on current market purchases publishers have paid \$7 or more for paper bought in the same way prior to January 1st for between \$2 and \$3.

The commission says:

"Most newsprint paper, probably about 90%, is sold on contract for periods of a year or more. Before the advance began contract prices for newsprint paper were generally less than \$2 per 100 pounds, free on board, mill. During first half of 1916 contract prices for large quantities in some instances went as high as \$3 per 100, and since July 1, 1916, have run as high as \$3.50.

"Most of the contracts now in operation will expire within three or four months. Before January 1, 1916, current market prices ranged generally between \$2 and \$3 per 100 pounds, delivered, but since that time they have gone up as high as \$6 or \$7 per 100, and even higher in exceptional instances.

"Because most of the paper was sold under contracts previously made, on the average, the actual net receipts of domestic manufacturers for newsprint paper were less than \$2 per 100 during first half of 1916.

"Average cost of manufacture of newsprint paper in domestic mills was less than \$33 per ton, \$1.65 per 100, during first half of 1916. These average costs were slightly lower than average costs in any year from 1913 to 1915.

"Most important materials which advanced in price, sulphite and ground wood, were produced by most paper manufacturers without an increase in cost, and not bought at market prices.

"Quantity of newsprint paper produced by domestic manufacturers in first half of 1916 was somewhat greater than in any preceding half year since middle of 1913.

"Quantity imported, which came chiefly from Canada, equaled about one-third of domestic production, and showed a great increase in the first half of 1916.

"An increase in demand for newsprint paper is indicated by fact that sworn statements respecting circulation of newspapers generally show larger issues by leading newspapers, and by fact that number of pages of the larger newspapers have very generally increased on account of large increases in advertising and news matter."

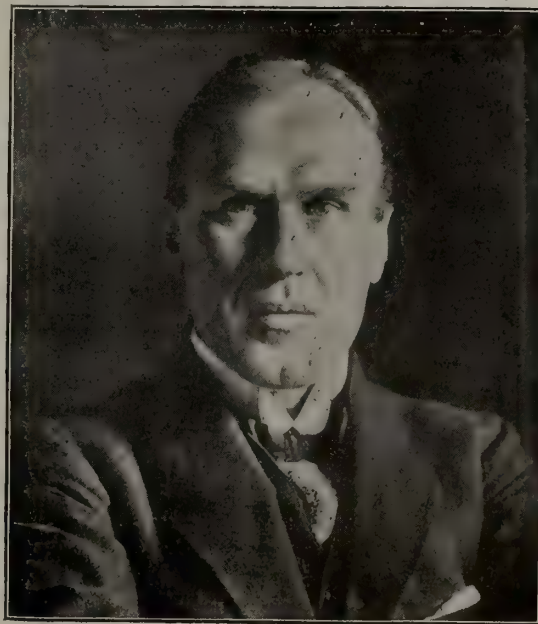
TO USE THE BARK OF A TREE.

The pork packers are said to market everything of the hog except its squeal. Lumbermen are learning to use the bark of a tree. Tree bark can be used in the manufacture of felt roofing. The waste from bark used for tanning purposes has been successfully used for low grade wall paper. Wall Street Journal says, experiments now in progress indicate hemlock bark may be used for sheathing paper, carpet lining, bottle wrappers and deadening felt.

TORONTO PAPER INCREASES DIVIDEND.

The Toronto Paper Company is the latest Canadian paper concern to join the "dividend-increase" class.

At a meeting of the directors of the Toronto Paper Co., held a few days ago at the head office in Toronto, it was decided that conditions in the industry warranted an increase in the dividend for the half-year ending December 31st. A disbursement for the six months of 3 per cent on the capital stock of the company was accordingly declared, this comparing with 2 per cent for the first half of the year.



R. S. Waldie, President Toronto Paper Manufacturing Co., whose dividend has just been increased.

The company paid at the rate of 6 per cent per annum between December 31, 1913, and June 30, 1914. The dividend was then passed for the balance of 1914.

In the directors' report for the year ending March 31, 1916, it was stated that "The directors hope that conditions will permit the payment of a 2 per cent. dividend on the capital stock on the 2nd July next, and at the same rate half-yearly thereafter."

CANADIAN PAPER AND PULP.

Canada, during the last fiscal year; increased her exports of paper about \$5,000,000. Exports of pulp wood decreased, while wood pulp increased about \$3,000,000.

In twelve months ended with June, Canada exported \$21,250,296 worth of paper; \$17,759,018 came to the United States and the rest went to the British Isles. Export the previous year was \$16,200,635.

Export of pulp wood was \$6,102,170, all of which came to the United States, a decrease from 1915 of \$360,955.

Wood pulp exports, which came to the United States, ran to \$10,793,647, total exports being \$12,220,988, Great Britain taking the remainder.

In the same period Canada imported from the United States finished paper and the manufactures thereof to value of \$4,243,530. Canada's importation of books, periodicals, etc., from the United States amounted to \$4,076,671, and from Great Britain \$986,447.

PULP AND PAPER NEWS

The Stratheona Paper Co., of Stratheona, Ont., which for the past few years has been specializing on building paper, is adding another machine—a 66-inch Harper-Fourdrinier. It will be in operation in a couple of months. Wrapping papers will likely be made on the second machine. The company, of which W. J. Finlay is manager, has at present two beating and one Jordan engines, and one seventy-two inch Fourdrinier the output being from ten to twelve tons a day. Mr. Finlay was in Montreal last week calling upon the trade and reports business as being good and the outlook very bright.

A by-law has been passed by the Hull, Que., city council giving a fixed valuation to the E. B. Eddy Co., Limited. The company asked that they be given a fixed assessment of \$1,750,000 for a period of ten years but it was decided to allow them the valuation placed on their holdings this year of \$2,152,000 for five years, with improvements exempted.

Australia and the Federated Malay States are now looking to British Columbia for a supply of wood pulp for the coming year. During the past few days S. C. Yeomans spent a few days in Vancouver, with the object of securing this commodity for the Malay states. G. L. Todman, who is a director of the Sydney, N. S. W., Sun, also recently interviewed interests in the Pacific Coast province. The latter stated that for some years Australian newspaper owners had been getting their pulp from Norway but today prices are three times to what they were at the outbreak of the war and freight rates are exceptionally high. He thought that Canada was a new field in which business might be done to advantage.

Twelve million dollars is promised from the operation of the business tax imposed by the budget of the last session of parliament and the initial assessments are now being paid by the corporations and individuals whose excess profit comes under the scope of the act. Several paper and pulp companies, who have been made very large profits during the year, will make contributions.

A resolution has been passed by several typographical unions in Ontario requesting the federal government to put in operation the War Measures Act of 1914 to regulate the price of paper to the printing trade. The resolutions point out the present high figures and call attention to the announcements of newsprint manufacturers that, on January 1st next, the cost will be advanced to about sixty per cent. The typographical unions set forth the fact that if the new rates become effective a number of newspapers will be forced out of business and a small army of employees deprived of the means of earning a living.

No more Sunday newspapers will be sold at border towns and cities in Ontario and orders have been issued by the Attorney General's Department to this effect.

A night school for the employees of the pulp and paper mills at Thorold, Merriton and St. Catharines, will shortly be established in Thorold and will open about November 21st. The public school has been obtained for the classes and leading authorities will undertake the work of instruction. The establishment of the school is being brought about by the Technical Section of the Canadian Pulp and Paper Association supported by the proprietors of the paper and pulp mills in the St. Catharines district who deserve every credit for the enthusiastic manner in which they are backing the project. This will be the first school of its kind undertaken in the Dominion.

S. F. Duncan, secretary-treasurer of the Provincial Paper Mills Co., Toronto, left his Studebaker motor car in front of the office, recently, and when he went to get it he found that the machine had disappeared. It was located later having been driven a distance of nearly two hundred miles and left in the ditch badly smashed.

The Toronto Paper Company are installing a fourth machine in order to take care of the increased requirements of their customers. It is an eighty-two inch Fourdrinier and it is expected that the machine will be in operation early in January when the capacity of the plant will be thirty tons a day of book and writing papers.

The new bleaching equipment of the Riordon Pulp and Paper Co., at Merriton, Ont., has been installed and the plant was put in operation this week. It is expected that the output will be thirty to thirty-five tons a day of bleached sulphite. In the boiler house at Merriton there have been placed in position three new water tube boilers. They give the company about fifty more per cent more steam capacity than the old return tubular boilers which were taken out. One of the old ground wood buildings has been equipped as a power plant to supply power to the mill. A new liquor plant has been built and a new water system installed. A new plant to produce bleach liquor was erected and a bleachery installed in the old wet machine building while a new wet machine addition and shipping room were put up. The company are now turning out at their Hawkesbury industry about one hundred and eighty tons of easy bleaching sulphite, and with thirty tons or more of entirely bleached sulphite at Merriton, the outlook is exceptionally bright.

AMERICAN CAPITAL FOR CANADIAN INDUSTRIES.

The importance of Canada as a paper making centre is evidenced every day, in the way American capital is coming over the border, securing a hold on pulp wood concessions and paper mills, and the position that Canada takes in "setting her house in order" for a tremendous increase in development along that line is watched keenly by the big men in the paper trade of the United States. Naturally the manufacturers of materials entering into the production of paper are looking to Canada for increasing market in their lines, and as an illustration of this, the well known house of Franklin H. Kalbfleisch Co., of New York City, with extensive works in eight cities and towns in a half dozen States, manufacturing Chemicals, have appointed Mr. A. M. Huestis, of Toronto, their Canadian Representative.

Mr. Huestis is well known to the paper trade, and will give that branch of the business particular attention. The Erie Chemical Works at Erie, Pa., situated near the border, and one of the Franklin H. Kalbfleisch group of factories, are large manufacturers of Sulphate of Alumina, a material used extensively by paper makers, and now in great demand. This company also manufactures Calcined Sulphate of Soda for Kraft Pulp, Caisin and Satin White. Mr. Huestis reports already a quick response to offerings of certain brands of Chemicals on contract for next year, showing that buyers of Canadian mills are wide awake to conditions governing the market in materials, and are taking advantage of the prices now offered for next year's delivery.



H. R. McMillan Chief Forester British Columbia. He has resigned his position to enter the lumber business.

RIORDON'S NEW BLEACHED SULPHITE MILL.

The Riordon Paper Company are starting their new mill at Meriton this week on bleached sulphite and will turn out about 10,000 tons of strong bleached sulphite pulp per year. This mill which was one of the oldest sulphite pulp mills on the continent was formerly on unbleached, but has been changed and hereafter will produce bleached pulp. As is well known, the market for this has been very strong and the in disposing of their output. As a matter of fact, they could sell double the quantity without putting a traveller on the road or making any special effort.

MAKES OLD PAPERS NEW.

A newspaper dispatch from Milwaukee says: The high cost of print paper is largely responsible for bringing into the limelight Dr. Thomas Jasperson, who has invented a process whereby old newspapers, formerly regarded as waste, are transformed into pure white stock, to be again used for newspaper printing. The process has already been given actual test, copies of a newspaper, yellow with age, having been converted into rolls or spotless paper and used for several issues of a Neenaha, Wisconsin, newspaper. Dr. Jasperson is being besieged with inquiries from all over the country.

The process removes all ink from the old newspapers and they are ground up, made into a pulp and run through a paper-making machine, coming out whiter than the original paper.

Dr. Jasperson worked more than four years on the subject before he perfected his compound. He finally completed his work about a year ago. He persuaded a manufacturer at Kalamazoo, Michigan, to make a batch. The result was a success. A few weeks ago the mill of the combined Locks Paper Company, Outagamie County, made one run of the Jasperson paper. It was used in the publication of a small issue of a daily paper at Neenaha, Wis., and success was assured. The paper was firm, white and of excellent quality.

REMINGTON MILL CHANGES HAND.

D. R. Hanna has purchased the controlling interest in the Remington Paper and Power Company, of Watertown, N. Y., for his sons, Mark A. Hanna II, and Carl H. Hanna, of Cleveland, who are to become officers of the company and members of the directorate.

The Remington Paper and Power Company operates three mills with a capacity of 48,000 tons of paper annually and is one of the largest manufacturers of paper in the country. In addition to the mills the company owns water power of 18,000 horse-power or better. The company employs more than 1,500 in the mill operation and wood supply department.

The mills are located at Norfolk, N. Y., Norwood, N. Y., and Raymondsville, N. Y., and their control was obtained by Mr. Hanna after spirited competition. Among the chief bidders were interests representing the New York World.

Mark A. Hanna II becomes an officer in the financial end of the proposition and Carl H. Hanna takes an official position in the operating end, both to be members of the board of directors, also. Both have taken up their new duties at Watertown, where the duties at Watertown, where the main offices of the company are located.

Associated with Messrs. Hanna will be Mark L. Wilder, who continues as president of the company; Birmingham & Seaman, paper brokers; James Whelan, of Port Arthur, who has large interests in the paper and wood pulp industry in British Columbia; William P. Leech, vice president and general manager of the Cleveland Company, publisher of the Cleveland Leader and Cleveland News and others.

In taking up their new duties Messrs. Hanna become leading figures in the papermaking industry of America.

THE LIMIT OF PROSPERITY.

Rising prices, reaching unprecedented levels so far as necessities of life are concerned, are already the cause of serious anxiety. From not a few quarters it is reported that the advance in living costs has fully offset the increase in wages; while in others it is found that this advance is serving noticeably to reduce demand in retail trade. Far-sighted observers already predict the arrival of the time when there will be a breakdown of the present industrial conditions, even if no material change in foreign demand occurs. The situation is still undeveloped; no positive predictions either as to the time or immediate cause of a business reaction can be safely offered; but the question is fairly to be asked what is the limit of present prosperity.

The history of business during the past two decades shows that as industrial activity increases, demand for labor advances, wages tend to rise, and in consequence purchasing power is more generally diffused. The use of such purchasing power results in carrying off supplies of goods as they are produced, and so in maintaining prices and business activity. When the time comes that prices are so high as to curtail demand, wages running relatively behind living costs, there is a tendency to "overproduction," and ultimately retailers are left with large unsold stocks which they find it hard to dispose of. The outcome is a gradual suspension of their purchases from wholesalers and manufacturers and finally a slackening of activity which may merge into depression or even develop into panic if conditions prove so bad as to check liquidation. The cycle is then complete and business prosperity has led to its own stoppage or destruction by the readiness of some elements in economic society to overreach. The real check to prosperity, however, was administered when the advance of prices led to the suspension or partial cessation of demand, and it was this cessation that really furnished the limit to the prosperous conditions previously existent. Is such a situation now in sight in the United States?

The essential respect in which the present cycle of prosperity has differed from predecessors has been its peculiar relation to foreign trade. When the European war first broke out, business was in only fair condition and local demand was unsatisfactory in many directions. The sudden pressure of European demand carried off surplus stocks, raised prices and then led to general wage advances. Consequent upon these developments there has been a great increase in domestic buying throughout the country. This has supplemented European demand most powerfully and has accelerated still further the upward movement of prices and wages. To-day, it is no doubt true to say that local prosperity is far more largely the outcome of home demand than of foreign, important as the latter is. If it be true that high prices are checking home purchasing, however, it would follow that a third phase was now to open in which we should once more find ourselves primarily dependent upon foreign buyers for our market. The fact that our surplus stocks in all lines have been so fully taken militates against the notion that home demand could in any near future be largely destroyed. The population must be supplied with a minimum of necessities and will buy them at some price, but the general tendency to the limitation of buying will be present and will exert its effect. By keeping the market swept clean,

so to speak, the European war will have modified the conditions otherwise likely to cause depression through overproduction, but cannot of course destroy or remove them. The situation due to the raising of prices and the corresponding curtailment of demand will remain and is beginning to be seen internationally as well as in domestic business. The beginning of an outward flow of gold in certain directions due to the hesitation of some foreign countries to buy here at existing levels testifies to the nature of the situation.

It is false and misleading to suggest, as a good many speakers, regardless of party, are now doing, that some "measures" can be devised to protect and maintain existing prosperity "after the war." If such measures can be applied in our relations with Europe, they can be applied in our relations among ourselves. Those who know how to prevent disturbance to our foreign trade must be able to improve and strengthen the condition of domestic business and prevent the latter from suffering any setback. In fact, the secret of domestic is the same as that of foreign trade — the offering of satisfactory goods at reasonable prices. The fabulous prices prevailing to-day in many lines must necessarily curtail all demand except that which grows out of absolutely unavoidable requirements. As soon as these requirements are themselves curtailed demand drops in corresponding proportion. The present situation is safeguarded in that the peculiar and strenuous conditions of demand during the past two years have prevented—thus far—any appearance of the so-called "overproduction" danger. It remains true that domestic demand is necessarily checked by the abnormal prices and that foreign demand will be similarly abridged in the more or less early future. Our advancing prices furnish a more and more nearly absolute limit to our prosperity because they indicate a more and more definite approach to the point beyond which buying power is suspended or so greatly reduced as to check productive activity. It will be necessary to prevent the further rise of these prices in competitive markets if we expect to go on selling goods in foreign countries, and to prevent it in domestic markets if we expect our home consumers to go on buying beyond what they require for absolute needs.—The New York Journal of Commerce.

UNITED STATES PULP IMPORTS.

The United States continues to increase her importations of both mechanical and chemical pulp. Imports of mechanical wood pulp in August, 1916, were 22,290 tons, valued at \$414,447. This compared with 15,249 tons, valued at \$254,973, imported in August, 1915.

Imports of chemical pulp in August, 1916, totaled 40,449 tons, valued at \$2,024,420. In August, 1915, the figures were 30,751 tons, valued at \$1,236,037.

For the eight months ending August, 1916, imports of all kinds of wood pulp were 346,605 tons. For the same period of 1915 the total was 319,828 tons.

SCRAPS OF PAPER.

German-American newspapers claim that Canada's white paper is made more costly to them than to American journals favoring the Allies. Berlin is fond of scraps of paper and the transplanted Teuton seems to be anxious to precipitate paper scraps in the United States.—Ottawa Citizen.

THE CANADIAN SITUATION.

(American Newspaper Publishers' Association Bulletin).

At the request of the publishers in Canada, through the Canadian Press Association, two conferences have been held with the Minister of Finance in Ottawa on the newsprint situation.

The attitude of the Minister and his experts is decidedly favorable to the publishers, and for this reason an investigation has been called at an early date which will go into the question thoroughly. The Government also asked publishers and paper manufacturers to try to get together separately and solve their difficulties among themselves.

The contention of the publishers is that these excessive prices should not be asked from Canadian publishers on the ground that Canada is manufacturing 1,800 tons of print a day, and using only about 350, and that the publishers in that country should obtain the benefit of the products manufactured from their raw materials at the lowest possible price. They have no quarrel with the print manufacturers for any prices they charge outside of Canada, but insist that the price of 3c. f.o.b. mill which has been put out by the manufacturers is ridiculous when their price on present contracts is 2c to 2.15c f.o.b. sidewalk.

They have therefore asked that if the print manufacturers decline to give them this natural benefit to which they claim they are entitled, that the Government shall impose a heavy export tax or prohibition, or shall regulate the price at which the paper shall be sold in Canada. This proposal is looked upon favorably as a general proposition by the Government. The Minister of Finance has, however, sailed for England, which will probably delay any definite steps for some time.

The Provincial Governments of Ontario and Quebec especially are also taking cognizance of the paper situation with a view to some action. The Province of Ontario has given limits to almost all the operating paper companies by merely the payment of cutting dues. These limits have been given to encourage development of the country and for the benefits which accrue from such a development. There is a possibility, therefore, that these Governments will take the stand that they should maintain the price of newsprint manufactured by such mills at a fair price which will not work a hardship upon the publishers in general, or in any way be detrimental to the publishing interest. They further feel that if abnormally high profits are to be obtained by selling products from these limits outside the country, they are entitled to a large share of this benefit by reason of the fact that they allow these mills to hold these limits without charge or for a very nominal charge.

The price of newsprint has been influenced slightly also in Canada by a number of magazines and weeklies formerly using the lower grades of book papers now having gone on newsprint. They are, of course able to pay comparatively high prices for their print paper, so that the consumption is thereby slightly increased.

In answer to the claims of the publishers, manufacturers maintain that the advance to 3 cents which they ask is justified on the ground of present costs and is imposed practically to take care of anticipated

future increases. Their position seems hard to maintain; in fact, it is impossible to justify such price upon that ground. The costs have unquestionably increased somewhat, but as yet the increased cost of materials and supplies has only affected the cost of paper slightly, possibly only 10 or 15 cents a hundred. Very few mills have had to meet any increased labor cost in their manufacturing, and increased wood costs will not be felt until the Spring of next year. Doubtless by the middle of next year many mills will experience an increase in manufacturing cost, due to new wood increases to the extent of 15 to 25 cents a hundred, also further increases in supplies, such as bronze, wires, felts, and chemicals. It is obviously unfair that increases should be demanded immediately for costs which will not become effective for at least six months, and which even in their most aggravated condition would not then increase the real cost of paper by the amount claimed. There is therefore every possibility that some adjustment will be made on the basis of the investigation soon to be brought on in Canada.

Individual manufacturers have further stated that if the Government undertakes to impose any export tax or prohibition of any kind upon print paper, they will shut down their paper mills and sell their sulphite and ground wood pulp, on which they can make a larger profit than they are now making by selling paper. At the immediate prices which are being obtained for both mechanical and chemical pulps, this contention can be sustained provided they are able to put these pulps in such form that they can be shipped. Few if any of the mills are equipped with wet machines or drying equipment to put such pulp in shape for transportation. Further, the shut down of their mills and breaking up of their paper making crews would be such a serious item that the threat could not be entertained seriously on account of the practical difficulties.

NEW PULP MILL AT PORT ARTHUR.

By a vote of 1,200 to forty, the ratepayers of Port Arthur have ratified an agreement between the city and Annwell G. McIntyre, of Toronto and Montreal, by which the latter, representing interests which now have four pulp mills in Canada, will build another here. They plan a plant of 150 tons output per day in three units of 50 tons per day each, to which is to be added a paper mill. Under the agreement upon which pulp limits are secured from the Ontario Government, the 150-ton plant must be completed in three years, at a cost of a million dollars. Construction is to be started immediately. The plant will be located at Bare Point in the north end of the city. The municipality gives one hundred acres of land with no exemption from taxation or other bonus.

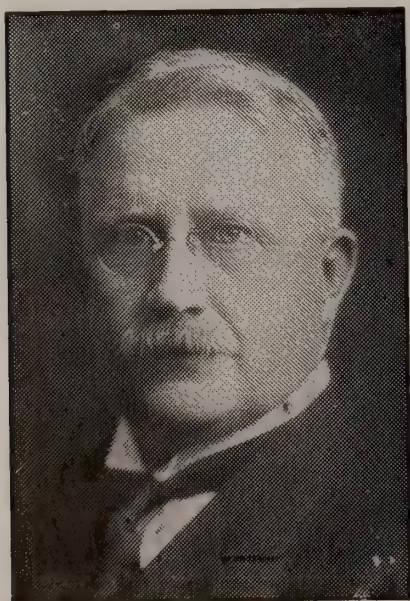
SECOND ONLY TO STEEL.

"The latest census of manufacturers in the United States shows that in America the manufacture of paper is second in importance only to the steel industry. The total invested capital is estimated at \$500,000,000, while the annual value of the manufactured product of the paper and pulp amounts to \$350,000,000."

BETTER FOREST PROTECTION FOR N. B.

The New Brunswick Government is preparing plans for the re-organization of the whole forest protection system. That the provincial forest possessions of over 18,000 square miles merit the most modern and effective safeguards against fire goes without saying. The notion that forests can be left to take care of themselves has been abandoned by nearly every government on earth having authority over timber lands. Once the responsibility for forest protection is admitted, it behooves a government to build up the most economical and up-to-date patrol service. The maintenance of New Brunswick's forest industries depends absolutely upon the elimination of destructive fires. In 1912, before the slump in the lumber trade was under way, New Brunswick produced nearly \$7,500,000 of lumber, shingles, pulp wood and lath, not counting fire wood, fence posts, etc. The New Brunswick Government receives an average of about \$500,000 a year from forest operations and thousands of workmen owe their living to the same source. A very substantial part of the business of our merchants and manufacturers is accounted for by the annual wood harvest.

To those who wonder if New Brunswick can be freed from serious forest fires, it may be pointed out that a private association of Quebec Province, the St. Maurice Forest Protective Association, patrolling two-thirds as much territory as the whole forest area of New Brunswick, have reduced forest fires to an extent hitherto regarded as impossible. This was accomplished by good organization, close inspection of rangers, and authority to regulate the clearing fires of settlers. New Brunswick has done much already in the way of forest protection, and can enjoy similar immunity by taking similar measures. Lacking them, no Government can hope to preserve invaluable timber assets against the ravages of fire.—Canadian Forestry Journal.



J. N. Greenshields, K.C., President Wayagamack Pulp and Paper Co., whose securities have been active on the Montreal Stock Exchange. Additional Directors are to be appointed at the annual meeting.

PULP AND PAPER NOTES.

New York Curb has listed 1,000,000 common shares North American Pulp and Paper without par value.

To help to relieve the paper crisis in France, an important organization of French newspapers has agreed that the size of the papers should be reduced one-half twice a week.

Interlake Pulp & Paper Co., of Appleton, Wis., has been to the Consolidated Water Power & Paper Co., of Grand Rapids, Wis. The price is said to have been \$1,000,000.

Five Jewish papers in New York city, with combined circulation of over 500,000, with double price from one cent to two cents, because of high cost of print paper and other material.

British admiralty will furnish a number of vessels for shipment of 30,000,000 feet of southern pine according to Standard Export Lumber Co. of New Orleans.

Co-operative purchasing of newsprint paper by members of the North Carolina Press Association has been decided upon. It was agreed that in no other way could the papers obtain a supply during 1917 at a price that would enable them to exist.

Representatives of paper jobbing houses, visiting Wisconsin, predict that print paper will go to ten cents a pound before the end of the year.

Arthur J. Lepper, who for the past five years has held a responsible position with the Canada Paper Co., Toronto, has enlisted for overseas, having joined the 59th Battery.

FORESTRY BRANCH AND TELEPHONES.

About 710 miles of telephone lines have been constructed by the Dominion Forestry Branch during the past four years in the 25,000,000 acres of reserves in the four western provinces. The mileage is distributed as follows:

	Miles.
Alberta Reserves	75
Alberta Reserves	265
Saskatchewan Reserves	50
Manitoba Reserves	320
Total.....	710

REMEMBER THE MEETING OF THE TECHNICAL SECTION OF THE CANADIAN PULP AND PAPER ASSOCIATION WHICH WILL BE HELD AT THE RITZ-CARLTON HOTEL, MONTREAL, NOVEMBER 24TH AND 25TH.

PUBLISHING COSTS.

The cost of producing an ordinary newspaper in Canada was shown to be from 3 to 5 cents a copy according to figures submitted at the annual meeting of the Canadian Association of Advertisers held in Toronto last week.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

New York, Nov. 13.

An authority on the kraft paper industry in the United States, in an interview with the representatives of the Pulp and Paper Magazine, stated, during the past fortnight, that the shortage of newsprint paper in this country is traceable to the increased output of wrapping paper. "The consumption of kraft is 25 per cent greater than it was two years ago," he said, on machines that were formally used for news. This, "Probably 450 tons daily are now being manufactured on machines that were formally used for news. This therefore, is the direct cause of the shortage of the newsprint supply."

Quite a number of the business men of Gardner, Me., have subscribed to stock in a proposed paper mill in that town. At a meeting of the business men's association several weeks ago they pledged themselves to \$10,000 towards the erection of a \$200,000 mill to manufacture celluloid tissue and high grade box boards. It is understood that as soon as sufficient capital is raised that work will be immediately started.

It is rumored in New York circles that the Berlin Mills Company is considering curtailing its newsprint production at Portland, Me. The company, however, does not expect to discontinue this grade entirely.

Extensive additions and improvements are under way at the plant of the District of Columbia Paper Company, Washington, D.C. According to the permit, this concern will spend about \$10,000 in improvements.

It is reported that the publishers of the Chicago Daily News have made arrangements with the Harmsworth Mills at Grand Falls, N.F., for their supply of newsprint paper. The publishers, however, absolutely deny the report and state that they are not negotiating with any one for any change of supply. The report evidently arose from the fact that the Harmsworth mill is installing additional machinery, and no one seems to know where the extra product is going.

The Ewing-Everest Pulp Company has been organized at Merrill, Wis., to take over the business of the Lindauer Pulp Company of that place. The new concern has secured a lease on the property and will continue the manufacture of pulp. The old mill will be thoroughly renovated and placed in first class condition.

One of the officials of the International Paper Company, in an interview with the representative of the Pulp and Paper Magazine during the past fortnight stated that although the company had expected on November 1st to fix its prices for 1917, the matter had been deferred for at least two weeks.

A news dispatch from Chicago says: "A local German daily heads a newspaper syndicate that is ne-

gotiating to buy a Wisconsin paper mill." No authentic information is yet available, though Horace Brand, publisher of the Chicago Staats-Zeitung, when interviewed by a reported, stated: "Rumors count for naught nowadays. We are not buying any paper mills."

The first meeting of the committee appointed by the Newsprint Manufacturers' Association to formulate uniform methods of accounting in paper mills, was held in Chicago several weeks ago. The duties of this committee, which has been made a permanent one, are to investigate conditions in paper mills and report them to the association.

The stock of the International Paper Company has advanced from something like \$13 or \$14 a share to \$60. In September, it is stated, the monthly profits reached between \$800,000 and \$900,000, or at the rate of about \$9,000,500 a year. Considering the fact that this company's product is sold almost entirely on contract, this gain is explained by the statement that the company has increased its output to meet the growing demand for a greater product. The company is now manufacturing about 1,400 tons of news daily.

The thirty-fourth annual meeting of the American Forestry Association has been announced for January 18 and 19, 1917. The meeting, as usual, will be held in Washington at the Hotel Willard. According to secretary P. S. Risdale, this meeting will be the largest ever held by the association. Many interesting papers on matters of interest to paper manufacturers have been promised. Full advanced details will be sent at a later date by your correspondent.

The Aldrich Paper Company is having its pulp wood taken out of the river at Emeryville, N. Y. There are approximately 10,000 cords in the river at the present time belonging to the company, besides what is to go to the National Dam for the sulphite mill. This total supply almost completely fills the river for a mile towards Hyatt.

Quite a number of news manufacturers who are making their own ground wood and sulphite are taking advantage of the prevailing high prices and asking more money for their finished product, is the opinion of one of the leading New York manufacturers. "Companies that grind their own pulp," he said, "necessarily have to face increased expenses—but nothing like the advance, some of them have made in white paper. These mills feel that they are entitled to an advance in the cost of news that will make up the difference between their own manufacturing expense and the price the exclusive sulphite and mechanical pulp mills are charging to those that buy their product and confine their efforts to paper making. They argue that if they went out into the open market they could get the difference, and for that reason are entitled to it."

It is understood that the printers' association of Milwaukee, Wis., will urge a Federal investigation of the high price of news. F. R. Wailke, vice president of the association says: "An investigation made by a committee from the North Side Master Printers' Association into the conditions of the paper manufacturing industry in Wisconsin revealed that the prevailing prices were entirely out of proportion to the cost of production, and conditions warrant a thorough investigation."

* * *

The Fourth Estate, in its current issue, says that an officer of a large paper company who will not permit the public use of his name, writes that he is prepared to enter into negotiations for an enlarged newsprint output. He states: "If publishers are willing to assist in financing a plant, as indicated by Mr. McIntyre, the paper expert of American Newspaper Publishers' Association, we are prepared to act. We have sufficient wood to assure a supply beyond the life of any man who will sign a contract with us. We are so located that we can transport our logs entirely by water. If the publishers want a mill that will turn out 1,000 tons a day, we stand prepared to give it to them—and at a price that will be fair."

* * *

A new pulp mill is to be built at Bogalusa, La., by a syndicate of northern and eastern capitalists. The operating company which has been organized, is known as the Bogalusa Paper Company. It is understood that G. H. Wood is to be the vice-president and that the mill and equipment will cost in the neighborhood of \$1,000,000. When completed, the mill will have a daily capacity of approximately 75 tons.

* * *

The Atlantic paper and Pulp Corporation was recently chartered in New York to do a general paper and pulp business. The directors of the new concern, which has a capital of \$250,000, are: R. M. Sheffey and D. T. Wells, of New York, and M. T. Nicholas of West Point, Va.

* * *

A news dispatch from Hattiesburg, Miss., states that that place will soon have a million dollar paper mill. George R. Wright is understood to be back of the enterprise and, according to the dispatch, native woods will be used to manufacture newsprint paper. —R. W. Jolly.

RANGER REACHES TREE TOP WITH SPIRAL LADDER.

On the summit of Brush Mountain in the Crater National Forest of southern Oregon, the top of a tall fir tree is used as a lookout station by a ranger who patrols the woods and is on a constant vigil for fires. In establishing his observatory, the man constructed a spiral ladder which winds about the trunk and extends to the uppermost part of the great tree. He did the work unassisted, and in a staunch and durable manner. The rungs of the ladder consist of heavy yew pegs driven into 2-in. auger holes, spaced at regular intervals and bored 1-ft. deep into the tree. After these members had been put in place, their outer ends were connected and reinforced by a log railing, made of partly sawed Douglas fir poles.

PAPER AND PULP TECHNOLOGY COURSES AT THE UNIVERSITY OF MAINE.

Editor of the Journal of Industrial and Engineering Chemistry:

I enclose a clipping from The Chemical Engineer for August, purporting to be an extract of a letter by A. D. Little in the Philadelphia Ledger. The date of its appearance in the Ledger is not given.

"There is no school of papermaking in the country, and one, of our most urgent industrial needs is the establishment of special schools in this and other industries for the adequate training of foremen who shall possess a sufficient knowledge of fundamental scientific principles and methods to appreciate the helpfulness of technical research. The Pratt Institute at Brooklyn is fully alive to this demand and has shaped its courses admirably to meet it."

Mr. Little is the author of this statement, as it appeared in his annual report in February, 1913, as official chemist of the American Pulp and Paper Association. This statement is no longer true. It has not represented the facts since it was made, for in that same month of February, 1913, the University of Maine offered its first course in Pulp Mill Chemistry. Since that time this university has introduced ten courses, both class-room and laboratory, in Paper and Pulp Technology. Last year more than forty students in Chemical Engineering elected these courses.

The effort of the University of Maine to provide instruction in the principles and practice of paper and pulp manufacture has met with such success that this field has since been entered by several other institutions. Some graduate work has already been done at the University of Michigan and work in this field is contemplated by Syracuse University, Massachusetts Institute of Technology and McGill University.

It should be understood that the work at the University of Maine is not merely the following out in the laboratory of a few set formulas and their explanation in the classroom, as a trade school might do. The curriculum at Maine embraces instruction in the fundamentals of chemistry, physics, engineering, mathematics and languages.

Among the students in the Pulp and Paper curriculum have been men from New York, West Virginia, Michigan, Wisconsin, Minnesota, and even from China and India. Graduates are already widely scattered in the United States and Canada.

It is, therefore, quite incorrect to say that there is no school of paper making in this country, even though we lack some expensive equipment and have not the extensive support and encouragement (compared with the schools of Germany and France) that ought to come from the Paper and Pulp Industry.

J. NEWELL STEPHENSON.

University of Maine, Orono, Nov. 1, 1916.

CALIFORNIAN FORESTRY JOURNAL.

Pulp and Paper Magazine has just received the Forestry number of the Journal of Agriculture published by the Agricultural Department of the University of California. The Journal in question is tastefully gotten up, beautifully illustrated, and contains a great deal of valuable information regarding the forests of California. The students are to be congratulated on the excellence of the publication they have issued.

Paper Prices Rise While Costs Decline

Federal Commission Declares Cost of Newsprint Production Less Than Last Three Years—To Hold Public Hearings—Manufacturers and Publishers Will Have an Opportunity to State Their Positions.

(Special to Pulp and Paper Magazine).

Washington, D.C., Nov. 9, 1916.

In a statement to-night announcing the virtual completion of its investigation of newsprint paper prices, the Federal Trade Commission declares that during the first half of this year, when prices already were soaring to unprecedented figures, the average cost of producing newsprint paper in domestic mills was less than \$1.65 per one hundred pounds, or below the average cost in the last three years.

The commission announced that before issuing its report public hearings will be conducted and manufacturers, publishers and others interested, will be given an opportunity to appear. No date is set for the hearings, but the report is said to be ready to send to the press in the near future.

Certain facts developed by the inquiry are made public now because most of the publishers' contracts for paper are about to expire. Contract prices rose this year from less than \$2.00 per hundred to \$3.00 and \$3.50, and on current market purchases the publishers have paid \$7.00 or more for paper bought in the same way prior to January 1, 1916, for between \$2.00 and \$3.00.

The statement in part follows:

"The price advance in newsprint paper which occasioned this investigation began early in 1916 and has continued down to the present. Most newsprint paper, probably about 90 per cent, is sold on contract for periods of a year or more. Before the price advance began contract prices for newsprint paper were generally less than \$2 per hundred pounds, free on board mill. During the first half of 1916 contract prices for large quantities in some instances went as high as \$3 per 100 pounds, and since July 1, 1916, have run as high as \$3.50.

"Most of the contracts now in operation will expire within three or four months. On current market purchases newspaper publishers have been paying manufacturers and jobbers very much higher prices. Before January 1, 1916, current market prices ranged generally between \$2 and \$3 per hundred pounds, delivered, depending on quantity, freight, and other circumstances, but since that time they have gone up as high as \$6 or \$7 per 100 pounds, for a considerable volume of business, and even higher in exceptional instances.

"The average price received by domestic manufacturers of newsprint paper did not advance in anything like the degree that current market prices advanced because most of the paper was sold under contracts previously made. On the average, the actual net receipts of domestic manufacturers for newsprint paper were less than \$2 per hundred pounds during the first half of 1916.

"The average cost of manufacture of newsprint paper in domestic mills was less than \$33 per ton, or \$1.65 per hundred pounds, during the first half of 1916, as shown both by the manufacturers' own cost sheets

and by the costs as revised by the accountants of the commission. Furthermore, these average costs were slightly lower than the average costs in any year from 1913 to 1915.

"Although the average cost declined in the first half of 1916, the market prices of some of the materials of manufacture advanced and were unusually high.

"It should be noted that the most important materials which advanced in price, sulphite and ground wood, were produced by most of the paper manufacturers without an increase in cost, and not bought at market prices, while some other manufacturers were protected against the increase in prices by contracts. Some of the other materials which were purchased at advanced prices were very small factors in the total cost. Certain economies were also practiced in the use of expensive materials.

"The quantity of newsprint paper produced by domestic manufacturers in the first half of 1916 was somewhat greater than in any preceding half year since the middle of 1913. The increase in production was accomplished by running mills to full capacity. Recently most mills have been operated twenty-four hours per day for six days per week.

"The quantity of newsprint paper imported, which came chiefly from Canada, equaled about one-third of the domestic production, and showed a great increase in the first half of 1916. The quantity exported also increased during this period, though the exports were small compared with imports. The prices, however, offered by foreign buyers were high.

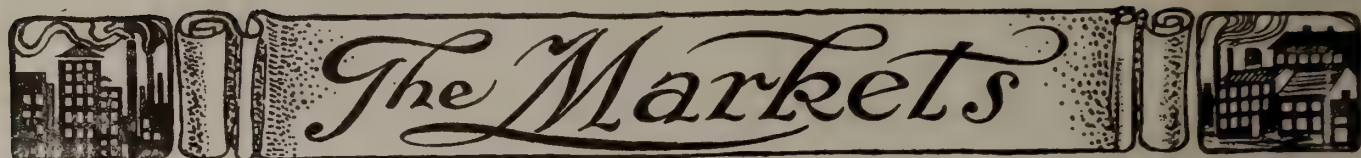
"The stocks of newsprint paper, which are very small in comparison with the production, not only declined during the first half of 1916, but also were lower than at any time during the year 1915.

"As there was a large increase in production and imports, accompanied by a decline in stocks, while there was only a small tonnage exported, it is evident that there was a decided increase in consumption during the first half of 1916.

"An increase in the demand for newsprint paper is also indicated by the fact that the sworn statements respecting the circulation of newspapers made to the Post Office Department generally show larger issues by the leading newspapers, and by the fact that the number of pages of the larger newspapers have very generally increased on account of large increases in advertising and news matter.

"Before the recent price advance certain other grades of paper were showing higher profits per ton than newsprint paper, and there was a tendency to change from this grade to other grades. This movement seems to have been checked for the present by the high prices of newsprint paper. Furthermore, it is said that, before the end of this year, four new machines — two in this country and two in Canada, with an aggregate daily capacity of about 160 tons — will begin operations of newsprint paper."—R. W. J.

REMEMBER THE MEETING OF THE TECHNICAL SECTION OF THE CANADIAN PULP AND PAPER ASSOCIATION WHICH WILL BE HELD AT THE RITZ-CARLTON HOTEL, MONTREAL, NOVEMBER 24TH AND 25TH.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

Paper conditions generally remain unchanged and the supply grows shorter all the time. Whether these will be an investigation into Canadian newsprint conditions during the coming month has not been decided and will not be until the return of Sir Thomas White, Minister of Finance, from England. It is expected that he will be home about the first week in December. In the meantime the special committee appointed by the Canadian Press Association is not inactive but is keeping its ear to the ground and prosecuting research quietly. One leading Canadian mill was offered five and a half cents, f.o.b. mill, for any quantity of newsprint from ten to twenty-five car loads during the past week and turned down the proposition.

Scores of inquiries are being made and every week representatives of large concerns from the United States and Canada pay a visit to Montreal, Toronto, Quebec and other places in the hope of getting some paper. It is not thought that price for newsprint in rolls, will be less than three cents, f.o.b. mill for 1917 while small dailies, who use sheet news, will be assessed from three and a quarter to three and a half. Over two hundred weekly papers in Canada have already raised their subscription price to one dollar and a half per year and it is hoped by the end of 1917 to have every worth while weekly charging this sum. One leading country daily publisher stated that he had been paying two forty for his newsprint in sheet lots during the past year, delivered, and he thought it would cost him three and a half for 1917, at the mill. No contracts are being renewed yet.

"It is like this", remarked a leading newsprint man this week, "Canadian publishers should be reasonably content to think that they can get supplies at all for the coming year and should not complain of the three cent figure. I contend that newsprint has been sold too cheap and that it was always worth three cents. Now across the border publishers are not airing their grievances about prices but are satisfied if they can secure paper at all, and even at that, many of them do not know which way to turn. American capitalists are viewing Canada with a measure of favour that they never did before and are willing to invest millions in pulp and paper plants in the Dominion so that they can secure the surplus of production after domestic requirements are met. I am told that number of influential publishers visited Canada during the past week and bought up a large share of the preferred stock in one of the big newsprint mills showing their faith in the future of the paper industry in this country." Many new paper stocks are being listed on the exchanges and the offerings are being eagerly taken up. Trading has been very active.

There is some talk heard that, if the newsprint producers continue to hold out for three cents that the federal government will impose a super tax on profits, but this allegation is not taken very seriously.

"Stocks of newsprint were never as low as they are at the present time," declared one sales manager, "and the result is that newspapers in both Canada and the United States are beginning their Christmas advertising with less paper at destination, in transit and at the mills than ever before in the history of the country. As for Sir Thomas White or anyone else in the service of the government, we do not take much credence in the report that the federal authorities will fix the price of news. They might as well attempt to adjust the figure for steel rail for the railways or regulate the price of wheat, sugar, butter or beef. We have not yet fixed the prices on paper contracts for next year but will do so by the end of the month. The situation is growing worse all the time and we have been offered fabulous sums for 'spot lots' which we have had to refuse."

In ground wood the supply is very short and prices are now from thirty-five dollars up, f.o.b. mill. It is learned that one Canadian plant delivered ground wood pulp last week to a point in Vermont and obtained forty-five dollars delivered. This shows the trend of the market. One enthusiast remarked that he would not be surprised to see ground wood pulp touch fifty dollars a ton before the winter is over owing to the shortage and the high price of the raw wood.

Rossed wood is now bringing seventeen dollars a cord at Thorold, Ont, rail shipment. "If I could get any ground wood pulp I could secure as high as forty dollars for it at the mill right now," added a leading representative.

Sulphite pulp remains about the same in price although there is very little to sell. Contracts are now being made with old customers for not more than the maximum supplied last year and the figure runs considerably over a hundred dollars a ton, or three times the price paid a year ago. There are certain provisions in the contracts that if quotations go beyond a named figure then the buyer must pay more pro rata and, in the meantime, if values should suddenly drop, adjustment will be a matter of arrangement between seller and buyer. There is no hope of relief for American mills from Scandinavia owing to the high prices paid in Europe, the difficulties of transportation, the exalted freight rates and war insurance and great expense for coal, sulphur, etc. The sulphite plant of the North American Pulp and Paper Co., at Chandler, is about to be doubled and other mills will be completed before the end of next year. Authorities affirm that there will be no recession in price before July next and perhaps not then. It is said that one Canadian plant has sold its output for the coming year at \$135 per ton which means an enormous profit. Bleached sulphite continues at its high level and sulphite is growing stronger all the time. The exports of chemical and mechanical pulp to the United States continue to increase and the use of ground wood to substitute sulphite is becoming more and more common.

As high as one hundred and fifteen dollars delivered.

is being obtained for news sulphite by one Canadian mill and this pulp is not very strong and rather dirty, they find that buyers will pay the price for it and they let it go.

In reference to the high cost of book and writing paper those who are close to the sources of supply of materials, production and demand, state that they see nothing but stiffer prices ahead. It is not thought there will be any change before the end of the year but, owing to the excessive figure for soft coal which is climbing up in price, the ever increasing scarcity of products and the acute labor situation, there is little hope for relief while the demand has not lessened one white. It is predicted by one eastern manufacturer that quotations will be up fully twenty-five per cent. before January expires. One of the largest department stores in Canada recently entered into a large contract with one of the mills for the supply of book papers for a long period, after making exhaustive inquiries into the state of the market with a view to taking over a mill or establishing one of their own. It is learned the result of their inquiry convinced them that it was cheaper to pay the mill the ruling quotations than enter upon an enterprise on their own half.

The conditions in the wrapping paper situation are still acute and fibre mills are constantly cutting down capacities while plants making manilas are five to six months behind. Gray brown is very hard to get at and kraft industries are three to four months behind in deliveries. Tissue mills are not looking for business at all and during past week tissue napkins went up ten per cent. It is expected that the conditions in the wrapping paper line may be somewhat relieved before the summer of 1917 as there will be two or three new machines in operation. Jobbers are of the opinion that 1917 will be a year of very high prices throughout. How much quotations will ascend it is impossible to foretell but there is no omen on the horizon pointing to the belief that any appreciable reduction is in sight.

Publishers of trade papers are constantly referring to the cost of book paper and the impossibility of obtaining supplies. Some have tried out newsprint but others have not found it satisfactory and are reverting to cheap book papers. At least half a dozen periodical publications in Canada have ceased operations during the past few months until after the war.

The following are the Toronto prices:

Paper.

News (rolls) \$3.00 up, at mill, in carload lots.
News (sheets), \$3.25 and higher, at mill, in carload lots, smaller lots higher.
Book papers (carload), No. 3.....\$7.00
Book papers (ton lots), No. 3.....\$7.50 to \$8.00
Book papers (carload), No. 2.....\$8.50 to \$9.00
Book papers (ton lots), No. 2.....\$9.00 to \$9.50
Book papers (carload), No. 1.....\$9.00 to \$9.75
Book papers (ton lots), No. 1.....\$9.50 to 10.00
White bonds11 cents up.
Cuttings,9 cents up.
Grey Browns\$4.00 to \$5.00
Grey\$7.00 to \$8.50
Manila, No. 1.....\$7.00 to \$8.50
Manila, B.\$5.00 to \$6.50
Glazed Kraft\$8.50 to \$11.00
Un glazed Kraft\$8.75 to \$11.00

Tissues, bleached.....\$1.60 to \$2.30
Tissues, (manila or white sulphite).....\$1.20 to \$1.60
Tissues, cap.80c to \$1.15
Natural, greaseproof13c to 18c
Half Bleached Greaseproof15c to 19c
Bleached greaseproof17c to 21c
Genuine Vegetable Parchment22c to 25c
Drug papers, whites and tints9½c to 13c
Paper bags, Manila30% discount.
Paper bags, kraft,15% discount.
Confectionery bags,15% discount.

Pulp.

F.O.B. Mill.

Ground woodpulp\$35.00 to \$40.00
Easy Bleaching Sulphite6c to 6½c
Sulphite, news grade\$110.00 to \$115.00
Sulphite (bleached)8½c to 9½c
Sulphate\$120.00

An increase of from a quarter to half a cent has just gone into effect on manila and fibre papers and the following prices now prevail in the trade:

	Car load.	1-ton and up.	Less than 1-ton.
Gray brown	\$4.25	\$4.50	\$4.85
News counter rolls	4.25	4.50	4.85
B. Manila	5.00	5.35	5.75
No. 1. manila	7.25	7.75	8.50
Fibre (basis 24 x 36, 40-lbs. or heavier)	7.25	7.75	8.50
Fibre (light and down to 30 lbs.)		5% extra.	
Samson "B" fibre and all corresponding brands ..	6.75	7.25	8.25

In the rag and paper stock market there has been an advance in hard, soft and mixed shavings and in book and ledges stock. Cotton and roofing rags are declining. The mills generally have not been buying much stock during the past few days.

The latest quotations are:

Paper Stock.

No. 1 hard shavings\$4.90
No. 1 soft white shavings\$4.40
No. 1 mixed shavings85c
White blanks\$1.45
Heavy ledger stock\$2.70
No. 1 book stock\$1.62½
No. 1 Manila envelope cuttings\$2.40
No. 1 print Manilas\$1.25
Folded news85c
Over issues85c
No. 1 clean mixed paper80c
Old white cotton\$4.65
Thirds and blue\$2.60
No. 1 white shirt cuttings\$7.00
Black overall cuttings\$2.60
New light flannelettes.....\$5.25
Ordinary satinets and flock.....\$1.80
Tailor Rags\$1.90

MONTREAL MARKETS.

Book—News—Writing and Posters.

Roll News, \$3.00 for carloads proportionate increase on small lots.
Sheet News, \$3.25 to \$3.50 carloads, \$3.75 up small lots.

No. 1 Book, 7.50 to 8.25.
 No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.
 No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.
 Writings, \$8.00 to \$10.00.
 Writing Manila, 6.95.
 Cover papers, 11 to 14½¢, according to colors wanted.
 Colored Poster, 6½ to 7½¢.

An extra charge of 10¢ per 100 lbs. will be made when Book Papers are packed in frames, and 15¢ per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs.	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs. . .	3.40	3.65	3.90

COURSE IN CHEMICAL RESEARCH.

At the Eastern Manufacturing Company of Bangor, Maine, the Massachusetts Institute of Technology is making ready to start a course of instruction in Industrial Chemical Research. Candidates for the degree of Master of Science in Chemical Engineering will spend six weeks of their fourth year in the Eastern Company's Mill studying Chemical Engineering problems that arise in the making of paper, sulphite, pulp and electrolytic pulp bleach. Other industries are to be studied in a similar manner. Mr. Hugo H. Hanson who has been for some time at the Sulphate Mill at La Tuque is to be Director of the research work at the Eastern Manufacturing Company. The first squad of students will report in February, and others will follow in successive groups for six months. While not engaged in supervising this work, Mr. Hanson will devote his time to the regular interests of the Eastern Manufacturing Company.

UNIFORM SYSTEM OF ACCOUNTING.

A meeting of the Special Committee on Uniform System of Accounting was held at the Hotel Blackstone, in the City of Chicago, on October 18th and 19th, at which time a very full representation of the members of the Committee was present writes Mr. F. Steele of the Newsprint Manufacturers' Association.

The Committee has outlined a report such as was desired by the Executive Committee of this Association, and it will be sent out to our members very shortly, and it is very greatly to be hoped that the suggestions and recommendations made by the Committee will be adopted by our members.

It was decided by the Executive Committee at last meeting to appoint a Permanent Committee Accounting and Costs, consisting of the following members:

Mr. Owen Shepherd, Treasurer of the International Paper Company, 30 Broad Street, New York.
 Mr. T. McLaren, Comptroller, Minnesota and Ontario Power Company, Andrus Bldg., Minneapolis, Minn.
 Mr. P. B. Wilson, Vice President, Spanish River Paper and Paper Mills, Ltd., Sault Ste. Marie, Ont.
 Mr. Louis Armstrong, Assistant Treasurer, Laurentide Co., Ltd., Grand Mere, Que.
 Mr. J. M. Sexsmith, Assistant Treasurer, St. Regis Paper Company, Watertown, N. Y.

It is expected that in view of the high character of the membership of this Committee, it will be able to work out many plans for the betterment of the accounting methods employed by the industry in the future.

Do You Know That

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Do better Beating and Brushing than Tub-beaters, and that you can save ⅓ of the cost, ½ the power, and ¼ of your floor space, by using them?

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Beveridge Paper Company, Limited

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BOILER PRESERVATIVES are unlike anything else on the market and we can show you testimonials from the largest paper mills in America and five reasons why they will save you 25 per cent or more on your fuel bill, without polluting your steam.

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Lockport Woolen Superfine Wet and Press Felts.
 Fine felts for fine papers.
 Best felts for all papers.

A trial will convince you that they mean the minimum cost per ton paper made and that is what counts.

Satisfaction guaranteed.

Will be glad to have from mills at any time samples and price to clear oddments, overruns, etc.

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FOR ITALY

A permanent business in Canadian Pulp can be established in Italy if the proposition is tackled at once while the Scandinavians are out of the market.

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Pulp and Paper Mills, particularly under present conditions, require that the power generated be transmitted without loss to the various machines. Present demand and prices make it absolutely essential that there be no lost power, and 'AMPHIBIA' leather belting will transmit your power without loss, even on your Fourdriner Machines, Jordans, Beaters, etc., where the variation of load makes the service severe.

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An attractive little booklet, written by the Right Hon. Winston Churchill, dealing with the story of Britain's double defence against Prussian oppression sent free for the asking. It's well worth reading. Send for your copy to-day, as the supply is limited.



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To insure satisfaction state where belt is to run.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Old Systems:**
 Advance Engineering Co., Ltd., Toronto, Ont.
 Darling Bros., Montreal, P. Q.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Compressors:**
 Fraser, W., Montreal
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Lum:**
 Kalbfleisch, Franklin & Co., New York.
- Markers:**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
 Voith, J. M. Co., Inc., New York, N.Y.
- Earings:**
 Goldie & McCulloch Co., Ltd., Galt, Ont.
- Meaters:**
 Bertrams Ltd., Edinburgh, Scotland.
 Claflin Eng. Co., Lancaster, Ohio.
 Emerson Mfg. Co., Lawrence, Mass.
 Jones, E. D. & Sons Co., Pittsfield, Mass.
 Marx & Co., J., London, England.
 Noble & Wood Machine Co., Hoosick Falls, N.Y.
 Process Engineers, Ltd., Montreal, Canada.
 Voith, J. M. Co., Inc., New York, N.Y.
 Waterous Engine Works Co., Ltd., Brantford, Canada.
- Elting:**
 Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
 Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
 Dominion Belting Co., Hamilton, Canada.
 Jones and Glassco, St. Nicholas Building, Montreal, Canada.
 Main Belting Co. of Can., Ltd., Montreal, Que.
 Sadler & Haworth, Montreal.
- elt Conveyors:**
 The Jeffrey Mfg. Co., Montreal, Que.
- Leaching Powders:**
 Hooker Electrochemical Co., Wall St., New York, N.Y.
 Klipstein, A. & Co., Ltd., Montreal, Canada.
- Leach Systems:**
 Advance Engineering Co., Ltd., Toronto, Ont.
- lowers:**
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Sherbrooke Machine Co., Sherbrooke, Que.
- ollers:**
 Goldie & McCulloch Co., Ltd., Galt, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- ollers—Water Tube:**
 Babcock & Wilcox, Ltd., Montreal, P. Que.
 Goldie & McCulloch Co., Ltd., Galt, Ont.
- raes Wire Cloth, Fourdrinier Wires:**
 Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
 Christie, Geo., Ltd., Glasgow, Scotland.
 Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
 Taylor, James, St. Francois Xavier Street, Montreal, Canada.
 Westbye, P. P., Peterboro, Canada.
- able Conveyors:**
 The Jeffrey Mfg. Co., Columbus, Ohio.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- alender Rolls:**
 Bertrams, Ltd., Edinburgh, Scotland.
 Farrel Foundry and Machine Co., Ansonia, Conn.
- arriers:**
 Northern Crane Works, Walkerville, Ont.
- ars, Dump and Flat**
 Canadian Equipment Co., Montreal.
 Fraser, W., Montreal
 Sessenwein Bros., Montreal
- aein and Satin White:**
 Kalbfleisch, Franklin & Co., New York.
- astage:**
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Ottawa Car Mfg Co., Ottawa, Ont.
- hain Crane:**
 Northern Crane Works, Walkerville, Ont.
- hain Blocks:**
 The Jeffrey Mfg. Co., Montreal, Que.
- hain Conveyors:**
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- hain Drives (Silent and Steel Roller):**
 Jones and Glassco, St. Nicholas Building, Montreal.
- hange Speed Gears:**
 Jones and Glassco, St. Nicholas Building, Montreal.
- hemicals, Colors, Etc.:**
 Klipstein, A. & Co., Montreal, Canada.
 Hooker Electrochemical Co., New York, N.Y.
 Paper Makers' Chemical Co., Easton, Pa.
 Tippet, A. P. & Co., Montreal, Canada.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- himeys:**
 Canadian Kellogg Co. Ltd., New York.
- hina Clay:**
 China Clay Co., Manchester, England.
 Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
 Paper Makers' Chemical Co., Easton, Pa.
 Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- hippers:**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- hlp Disintegrators:**
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens:**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Carthage Machine Co., Carthage, N.Y.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches:**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Goldie & McCulloch Co., Ltd., Galt, Ont.
 Jones and Glassco, St. Nicholas Building, Montreal, Canada.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Coal and Ash Conveyors:**
 Babcock & Wilcox, Ltd., Montreal, P. Q.
- Condensers—Barometric:**
 Canadian Kellogg Co. Ltd., New York.
 Goldie & McCulloch Co., Ltd., Galt, Ont.
- Conveying Machinery:**
 Caldwell, H. W. & Son Co., Chicago, Ill.
 Jeffrey Mfg. Co., Montreal, Canada.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Northern Crane Works, Walkerville, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls:**
 Bertrams Ltd., Edinburgh, Scotland.
 Process Engineers, Ltd., Montreal, Canada.
 Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures:**
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son, Co., Chicago.
- Couplings:**
 Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
 Darling Bros., Montreal, P. Q.
 Goldie & McCulloch Co., Ltd., Galt, Ont.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Jones and Glassco, St. Nicholas Building Montreal.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
- Cranes:**
 Canadian Equipment Co., Montreal.
 Northern Crane Works, Ltd., Walkerville, Ont.
 Smart-Turner Machine Co., Hamilton, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Electric:**
 Babcock & Wilcox, Ltd., Montreal, P. Que.
- Cranes—Hand Power:**
 Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 Northern Crane Works, Walkerville, Ont.
- Cranes—Overhead Travelling:**
 Smart-Turner Machine Co., Ltd., Hamilton, Ont.
 Northern Crane Works, Walkerville, Ont.
- Cut Gears:**
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Jones and Glassco, St. Nicholas Building, Montreal.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
 H. W. Caldwell & Son Co., Chicago.
- Cutters:**
 Bertrams, Ltd., Edinburgh, Scotland.
- Cylinders:**
 Bertrams, Ltd., Edinburgh, Scotland.
 Goldie & McCulloch Co., Ltd., Galt, Ont.
 Sherbrooke Machinery Co., Sherbrooke, Que.
 The Waterous Engine Works, Co., Limited, Brantford, Ont.
- Cylinder Covers:**
 Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Moulds:**
 Bertrams Ltd., Edinburgh, Scotland.
 Sherbrooke Machinery Co., Sherbrooke, Que.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls:**
 Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
 The Waterous Engine Works Co., Limited, Brantford, Ont.
- Dandy Rolls:**
 Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
 Johnson & Sons, C. H., St. Henry, Montreal, Canada.
- Diffusers:**
 Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Digesters:**
 Canadian Kellogg Co. Ltd., New York.
- Digester Lining:**
 Advance Engineering Co., Ltd., Toronto, Ont.
 Panzi Digester Lining Co., Muskegon, Mich.
 Process Engineers, Ltd., Montreal, Canada.
 Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Dryers:**
 Bertrams, Ltd., Edinburgh, Scotland.
- Engines:**
 Goldie & McCulloch Co., Ltd., Galt, Ont.
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 The Waterous Engine Works, Co., Limited, Brantford, Ont.
- Evaporators:**
 Jenckes Machine Co., Ltd., Sherbrooke, Que.
 Process Engineers, Ltd., Montreal, Canada.
 Scott, Ernest & Co., Fall River, Mass.
- Exhausters:**
 The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery:**
 Process Engineers, Ltd., Montreal, Canada.
- Exporters:**
 Parsons Trading Co., New York, N.Y.
- Felts:**
 Ayers, Ltd., Lachute Mills, Que.
 Bates & Innes, Ltd., Carleton Place, Ont.
 Huyck, F. C., Albany, N.Y.
 Johnson, C. H. & Sons, St. Henry, Montreal, Que.

MILL SUPPLIES---Continued

Filters:

Darling Bros., Montreal, P. Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Gauges:

Darling Bros., Montreal, P. Q.

Gears:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grate Bars:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Hangers:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Heaters:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P. Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.

Iron Castings:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.

Knives:

Arcton, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hay, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Latex Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Overhangs:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Locomotives:

Canadian Equipment Co., Montreal.
Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built:

Sessenwein Bros., Montreal
Fraser, W., Montreal

Paints:

Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Broomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Downingtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P. Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmisley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. Elias Wilkinson, Toronto, Ont.

Rollstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Roller Drives:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Piping—High Pressure:

Canadian Kellogg Co. Ltd., New York.

Piping—Hydraulic:

Canadian Kellogg Co. Ltd., New York.

Piping—Power Plant:

Canadian Kellogg Co. Ltd., New York.

Piping—Welded:

Canadian Kellogg Co. Ltd., New York

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Broomer & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulleys:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
Stancliffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P. Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Radial Brick:

Canadian Kellogg Co. Ltd., New York.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Canadian Equipment Co., Montreal.
Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Reinforced Concrete:

Canadian Kellogg Co. Ltd., New York.

Rope, Cotton and Manila:

Jones and Glasco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada

Rosin Size Bolders and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Safes:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Salt Cake:

Kalbfleisch, Franklin & Co., New York.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal, Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

Shafting:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Shredders:

The Jeffrey Mfg. Co., Montreal, Que.

Slitters and Re-Winders:

Bertrams, Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.

Smoke Stacks:

Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

MILL SUPPLIES--Continued

- Table Blue:**
Brandram-Henderson Ltd., Montreal.
- ral Conveyor:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- it Pulleys—Wood and Steel:**
The Jeffrey Mfg. Co., Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- ockets:**
The Jeffrey Mfg. Co., Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- icks:**
Canadian Kellogg Co. Ltd., New York.
- am Appliances:**
Canadian Equipment Co., Montreal.
Darling Bros., Montreal, Que.
- am Regulator:**
Pickles, W. F., Buckland, Conn.
- el Barrels:**
The Smart-Turner Machine Co., Hamilton, Ont.
- el Drums:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Smart-Turner Machine Co., Hamilton, Ont.
- kers—Mechanical:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Penmans, Ltd., St. Hyacinthe, Canada.
- ainers—Water:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- aw Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- aw Dusters:**
Bertrams, Ltd., Edinburgh, Scotland.
- rawboard Making Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
- tructural Steel Works:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- uff Chests:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- ction Couch:**
Process Engineers, Ltd., Montreal, Canada.
- olphite Mill Equipment:**
Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- osphate of Alumina:**
Kalbfleisch, Franklin & Co., New York.
- osphate of Soda Calcined:**
Kalbfleisch, Franklin & Co., New York.
- ulphate Mill Equipment:**
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- ulphur:**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- ulphur Burners:**
Advance Engineering Co. Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
- Stebbins Engineering and Manufacturing Co., Watertown, N.Y.**
Waterous Engine Works Co., Ltd., Brantford, Ont.
- Superheaters—Steam:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Tanks:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Tanks—Welded:**
Canadian Kellogg Co. Ltd., New York.
- Transmission Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones & Glassco, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Transmission Rope:**
Jones & Glassco, Co., Montreal, P. Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Travelling Cranes:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.
- Trolleys:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Tube Cleaners:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Turbines:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurttemberg, Germany.
- Valts and Valt Doors:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Water Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smith, S. Morgan Co., York, Pa.
- Wire Cloth for Paper Machines:**
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Waste:**
Hough, R., London, England.
- Wet Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
- Booth, J. R., Ottawa, Ont.
- Bronson Co., Ltd., Ottawa, Ont.
- Campbell Lumber Co., Weymouth, N.S.
- Canada Paper Co., Ltd., Montreal, Que.
- Chicoutimi Pulp Co., Chicoutimi, Que.
- Davy, James, Thorold, Ont.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
- Ford, J. & Co., Port Neuf, Que.
- Jacques-Cartier Pulp & Paper Co., Montreal.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Lake Megantic Pulp Co., Lake Megantic, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- MacLaren Co., Ltd., The James, Buckingham, Que.
- McLeod Pulp Co., Ltd., Liverpool, N.S.
- News Pulp & Paper Co., Ltd., St. Raymond, Que.
- Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
- North Shore Power, Railway & Navigation Co., Clarke City.
- Northumberland Pulp Co., Campbellford, Ont.
- Ontario Paper Company, Thorold, Ont.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Price-Porritt Pulp & Paper Co., Rimouski, Que.
- Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
- River-du-Loup Pulp Co., Ltd., Fraserville, Que.

- Soucy, F. Florentine, Old Lake Road, Que.
- Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Union Bag & Paper Co., Cape Madeleine, Que.
- Wilson, J. C., Ltd., Montreal, Que.

Kraft:

- Brompton Pulp & Paper Co., East Angus, Que.
- Dryden Timber and Power Co., Dryden, Ont.
- Brown Corporation, La Tuque, Que.
- Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

- Canada Paper Co., Ltd., Montreal and Toronto.
- Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

- Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
- Bathurst Lumber Co., Limited, Bathurst, N.B.
- Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
- British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
- Booth, J. R., Ottawa, Ont.
- Donnacona Pulp & Paper Co., Donnacona, Que.
- Edward Partington Pulp & Paper Co., Ltd., St. John, N.E.
- Eddy Co., The E. B., Ltd., Hull, Que.
- Jonquiere Pulp Co., Ltd., Jonquiere, Que.
- Laurentide Co., Ltd., Grand Mere, Que.
- Powell River Co., Ltd., Powell River, B.C.
- Price Bros. & Co., Ltd., Kenogami, Que.
- Riordon Pulp & Paper Co., Ltd., Montreal, Que.
- Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
- Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

risto .

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

ulding and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Gummed Paper Manufacturers:

Gummed Papers Ltd., Brampton, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Bag:

Eddy, The E. B. Co., Ltd., Hull, P.Q.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
Ford, J. & Co., Port Neuf.
Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

Binders' Board:

McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmiller, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

Eddy Co., The E. B., Ltd., Hull, Que.
Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Wall Board:

Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
Booth, J. R. Ottawa.
Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

Wrapping:

Booth, J. R., Ottawa, Ont.
Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

Writing:

Canada Paper Co., Montreal, Que.
Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
Rolland Paper Co., Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Manufacturing Co., Cornwall, Ont.

PAPER MILLS

Kinleith Paper Co., Ltd., St. Catharines, Ont.
Rolland Paper Co., St. Jerome, Que., Mount Rolland, Que., and Montreal, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Book and Litho:

Canada Paper Co., Ltd., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.



THE PROVINCE OF ONTARIO

is rich in timber, mineral, agricultural, and other resources.

Ontario has large areas of White Pine and other valuable timbers, her timber products last year representing one-third of the total output of Canada.

Ontario has pulpwood areas practically illimitable, and offers a great field for those desirous of embarking in the pulp and paper-making industry.

Ontario has innumerable waterfalls capable of supplying power for all manufacturing purposes, which are obtainable on reasonable terms, subject to development.

Ontario has large pulp and paper mills in operation at Ottawa, Sturgeon Falls, Spanish River, Sault Ste. Marie and Dryden and large plants are under construction at Abitibi on the Temiskaming and Northern Ontario Railway, and Fort Frances on the Rainy River.

Ontario is traversed East and West by three great transcontinental railways, and North and South by three others.

For full particulars as to Ontario's great resources and the advantages offered for large wood-using industries apply to

Hon. W. H. Hearst

Minister of Lands, Forests and Mines

Toronto

Paper Mill Agents and Commission Merchants

CALGARY, ALTA.:

Barbour Ellis & Davis.
Davis, W. D. & Co., 3rd Street, W., and 7th Avenue.
John Martin Paper Co., Ltd.
Tees & Persse, of Alberta, Limited.

EDMONTON, ALTA.:

Tees & Persse.
John Martin Paper Co., Ltd.

SASKATOON, ALTA.:

Tees & Persse, of Alberta, Limited.

VANGOUVER, B.C.:

Brake, Crendon Co., Ltd.
Columbia Paper Co., Ltd.
Mitchell Bros., 123 Cordova E.
Smith, Davidson & Wright.
J. C. Wilson Co., Ltd.

VICTORIA, B.C.:

Mitchell Bros, 8 Bastion.

MOOSE JAW, SASK.:

Tees & Persse.

REGINA, SASK.:

H. G. Smith, Ltd.
Tees & Persse.

WINNIPEG, MAN.:

Barber & Ellis.
Clark Bros. & Co., Ltd., 143 Portage.
Ratcliff Paper Co., Ltd.
Hudson Paper Co.
Kilgour Bros.
McAllister & Watts.
McFarlane, Son & Hodgson, Bannatyne and Adelaide.
Tees & Persse.
John Martin Paper Co., Ltd.
Wilson, J. C., Co., Ltd.

ST. JOHN, N.B.:

Schofield Paper Co., Ltd., 26-30 Prince William.

MONCTON, N.B.:

Reid, F. P. & Co.

HALIFAX, N.S.:

Eastern Supply & Paper Co., 28 Bedford Row.
Latter, N., 104 Windsor.
Alien, T. C. & Co.

NEW GLASGOW, N.S.:

MacGregor, R. & Co.

KINGSTON, ONT.:

Hendry, J. A., 875 Princess.

HAMILTON, ONT.:

Buntin, Gillies & Co., Ltd., John and Jackson.
Murton C. A. 34 King William.
Powis, A., 64 King E.

OTTAWA, ONT.:

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Albertson, D. J.	64
Ambursen Hydraulic Construction Co., Ltd.	11
Ayers, Ltd.	68

B

Babcock & Wilcox, Ltd.	65
Bates & Innes	68
Barker, E. R.	64
Becker & Co.	67
Beloit Iron Works	14
Bertram, James & Son, Ltd.	10
Bertrams, Ltd.	2
Beveridge Paper Co Ltd.	398
Beveridge, Jas., Chatham, N. B.	62
Black-Clawson Co.	62
Boving Hydraulic & Engineering Co. Limited	6
Bowater, W. V. & Sons, Ltd.	8
Brandram-Henderson Ltd.	45
The Bronson Company	

C

Caldwell, H. W. & Son, Co.	18
Cameron Machine Co.	65
Canadian Boomer and Boschert Press Co.	3
Canadian Fairbanks-Morse Co., Ltd.	13
Canadian Kellngg Company	7
Canada Paper Co., Limited	66
Canadian Westinghouse Co., Ltd.	
Capital Wire Cloth Mfg. Co., Ltd.	60
Carthage Machine Co.	10
Chambers, Ltd.	2
Chicoutimi Pulp Co.	67
China Clay Co.	
Christie George, Ltd.	62
Churchill & Sim.	
Claflin Engineering Co.	398
Crossley, T. L.	65

D

Darling Bros., Ltd.	
DeCew, J. A.	64
Dean & Son	8
Dept. Lands, Forests, Mines	60
Disston, H. & Sons, Ltd	
Dominion Belting Co.	65
Dominion Pulp Woods' Limits	54
Downington Mfg. Co.	16
Dunlop Tire & Rubber Goods Co., Ltd.	

E

Eaton & Brownell	64
The E. B. Eddy Co., Ltd.	66
Emerson Mfg. Co.	9

F

Farrel Foundry & Machine Co.	11
Ferguson, H. S.	64
J. Ford & Company	
Fraser, W.	

G

Galt Knife Co., Limited	63
Gartshore, Jno. J.	65
Glens Falls Machine Works	
Goldie and McCulloch Co., Limited	

H

Hardy, Geo. F.	64
Hay Knife Co., Peter, Ltd.	
Hersey, Milton Co.	65
Hooker Electrochemical Co.	65
Huestis, A. M.	61
Huyck, F. C., Sons	12

J

Jeffrey Mfg. Co.	13
Jenssen, G. D. & Co.	64
Jenckes Machine Co.	
Johnson & Sons, Ltd., C. H.	18
Johnson, Chas.	4
Jones, E. D. & Sons, Co.	17
Jones & Glassco	6

K

Kalbfleisch Co.	61
Kimball H. S.	4
Klipstein, A. & Co., Ltd.	7

L

L'air Liquide Société	61
Lawrence Machine Co.	9
Laurentide Co., Ltd.	63
Little, Arthur D., Inc.	65
Lombard & Co.	6

M

Mackinnon, Holmes & Co.	
Main Belting Co. of Canada Ltd.	14
Mann & Cook	399
Marx, J. & Co.	65
Meincke, G. A. & Co.	62
Montreal Locomotive Works, Ltd.	63
Moore & White Co.	15

N

Noble & Wood Machine Co.	61
Northern Crane Works, Ltd.	
Norwood Engineering Co. of Can. Ltd	13

O

Ontario Pulp Wood Limits	56
Ottawa Car Mfg. Co., Ltd.	9

P

Panzl Digester Lining Co.	7
Paper Makers Chemical Co.	64
Parsons Trading Co.	18
Penmans, Limited	15
Pickles, W. F.	68
Prather, H. B.	64
Process Engineers, Ltd.	65
Provincial Paper Mills Co., Ltd.	59
Pullan, E.	65
Pulp & Paper Trading Co.	

R

Rice, Barton & Fales Machine & Iron Co.	16
Riordon Pulp & Paper Co., Ltd.	66
Rolland Paper Co., Ltd.	66
Rushworth, Wm. A.	8

S

Sadler and Haworth	400
Sandy Hill Iron & Brass Works	17
Schlick, Leo	64
Sewall, Jas. W.	65
Scott, Ernest & Co.	62
Sessenwein Bros.	65
Sherbrooke Machinery Co., Ltd.	5
Smart-Turner Machine Co.	68
Spielmann Agencies	65
Stancliffe Estates Co., Ltd.	68
Stebbins Engineering & Mfg. Co.	64

T

Taylor, J. A.	62
Ticonderoga Machine Works	

U

Union Screen Plate Co. of Canada, Ltd.	
Union Sulphur Co.	18

V

Vera Chemical Co. of Canada, Ltd.	6
Voith, J. M.	12

W

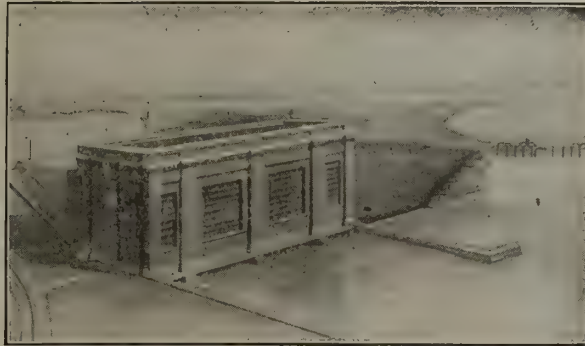
Wallace, Jos. H. & Co.	64
Walmsley Charles & Co., Ltd.	4
Waterous Engine Works Co., Ltd.	8
Westbye, P. P.	
Wilson-Peterson Co.	



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Tenders will be received by the undersigned up to and including the 1st day of February, 1917, for the right to cut pulpwood and pine timber on a certain area situated on the Black Sturgeon River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure, for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario.

Parties making tender will be required to deposit with their tender a marked cheque payable to the Honorable the Treasurer of the Province of Ontario, for ten thousand dollars (\$10,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$10,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned,

G. H. FERGUSON,

Minister of Lands, Forests and Mines.
Toronto, 1916.

Tenders for Pulpwood and Pine Limit.

Tenders will be received by the undersigned up to and including the 1st day of December next for the right to cut pulpwood and pine timber on a certain area situated on the Pic River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet, board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario—the paper mill to be erected when directed by the Minister of Lands, Forests and Mines.

Parties making tender will be required to deposit with their tender a marked cheque, payable to the Honorable the Treasurer of the Province of Ontario, for twenty-five thousand dollars (\$25,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$25,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

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For particulars as to description of territory, capital to be invested, etc., apply to the undersigned,

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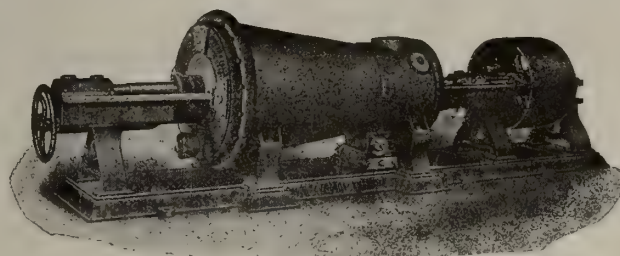
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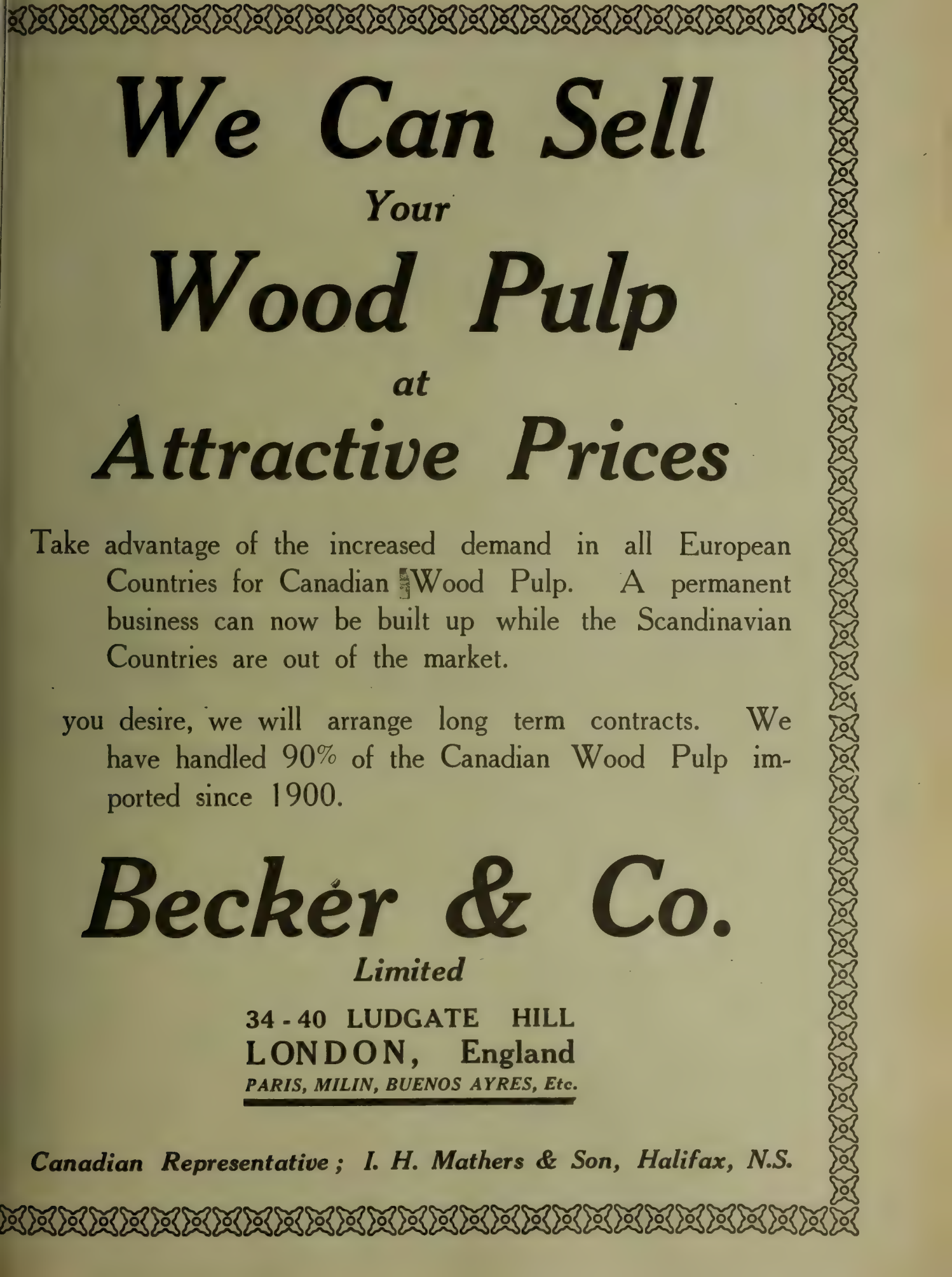
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BEST ENGLISH PULP STONES

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1878

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For
Pulp and
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The Pickle Automatic Steam Regulator



Saves steam

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This regulator gives you a higher and more uniform finished paper with less calendering.

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BUCKLAND CONN.



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High-class
PULP MILL
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the merits of

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HAMILTON - CANADA

PULP AND PAPER MAGAZINE OF CANADA

Special Features

in this Issue:

PROCEEDINGS OF TECHNICAL
SECTION.

CHARACTERISTICS OF FIBRE.

ELLWOOD WILSON ON FORESTRY
SUPPLY FOR PULP MILLS.

NEWS

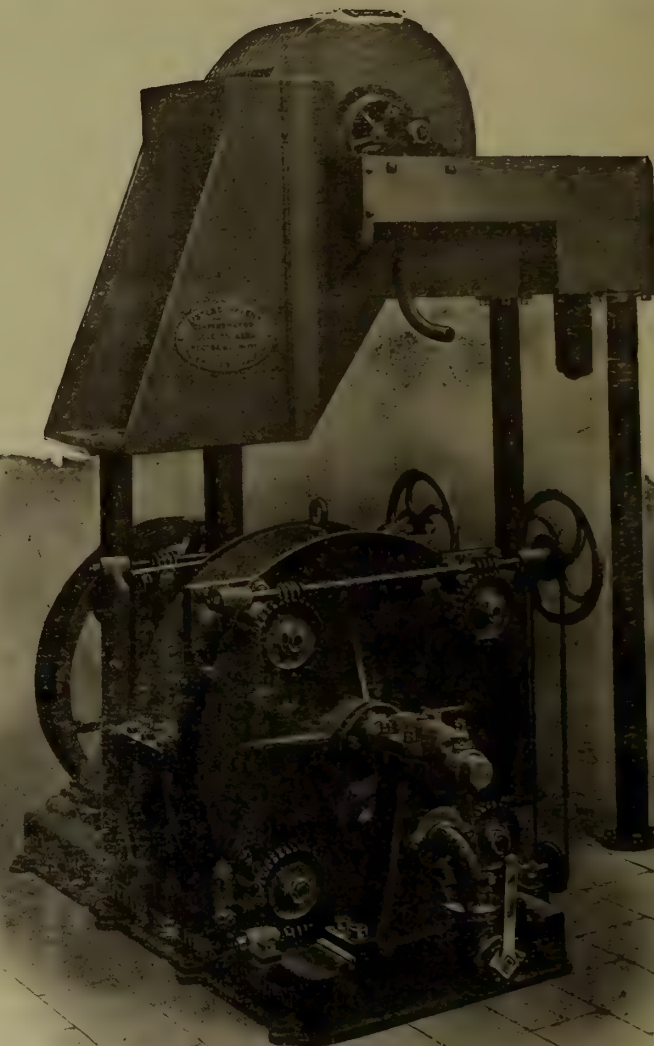
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

Bertrams Limited



MILNE'S PATENT REFINING ENGINE
(WITH LISTER'S PATENT CONCENTRATOR)
Code Word "REFIN, CONCE"

THE ACTION OF THIS REFINER IS PERFECT
owing to the fact that pulp will not pass through the second set of Bars
UNTIL PROPERLY REDUCED
Fibres which are sufficiently reduced pass easily through, while the unreduced Fibres
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American Newspaper Publishers' Association

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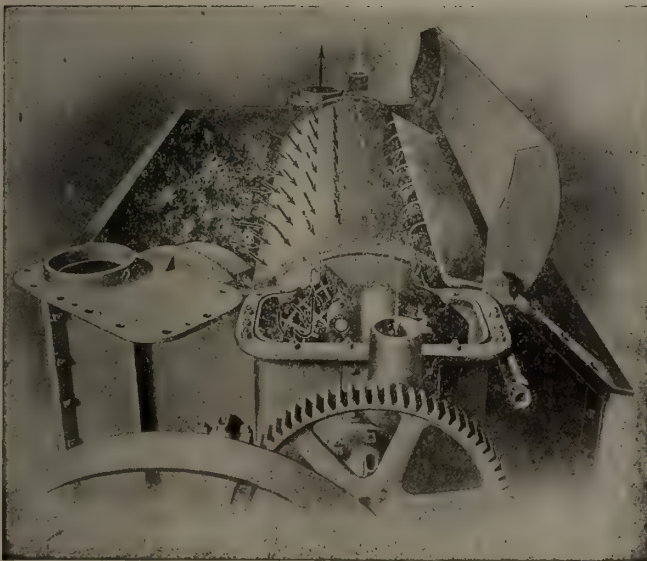
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The cost is very low compared with any system of sand filtration and the upkeep is very small.

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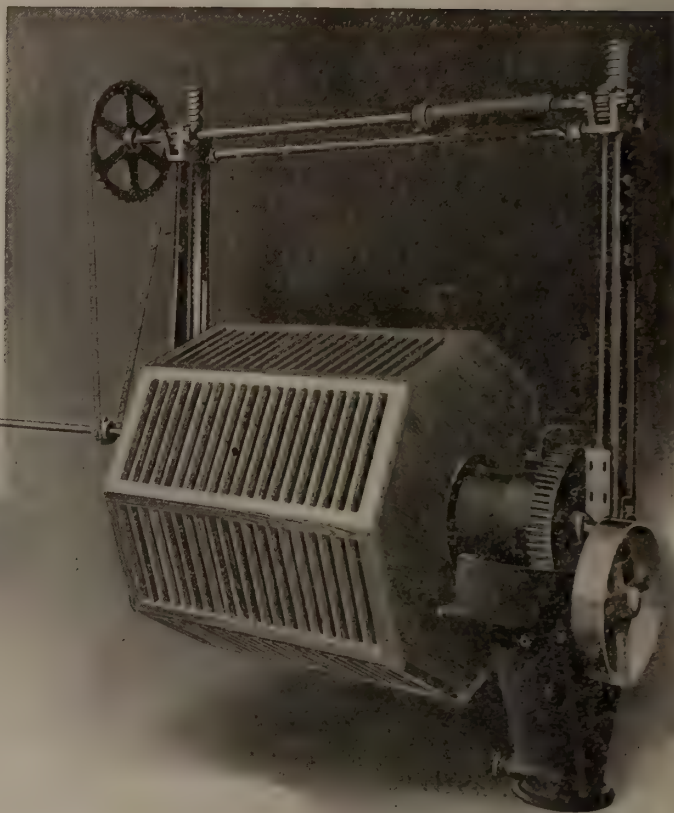
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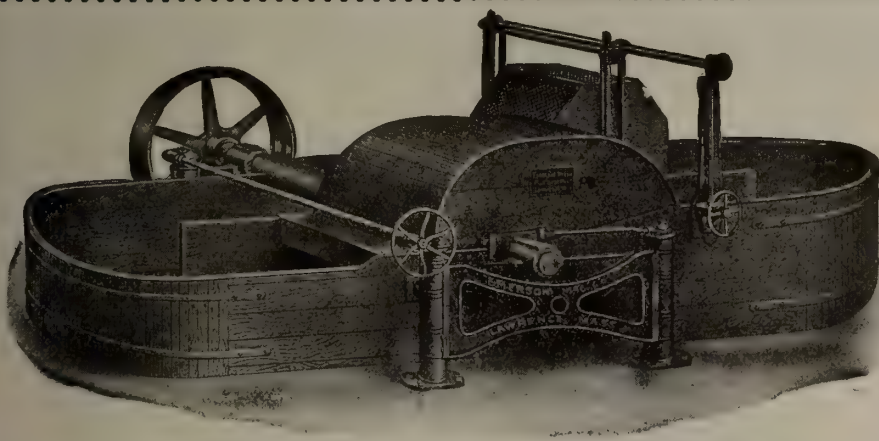
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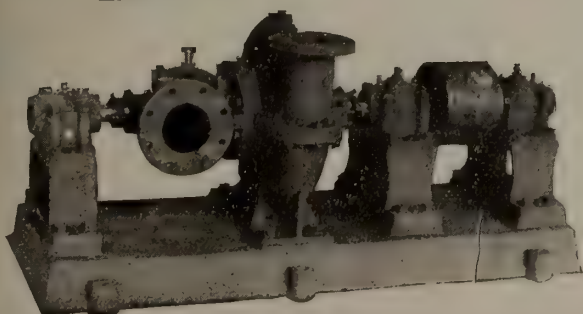
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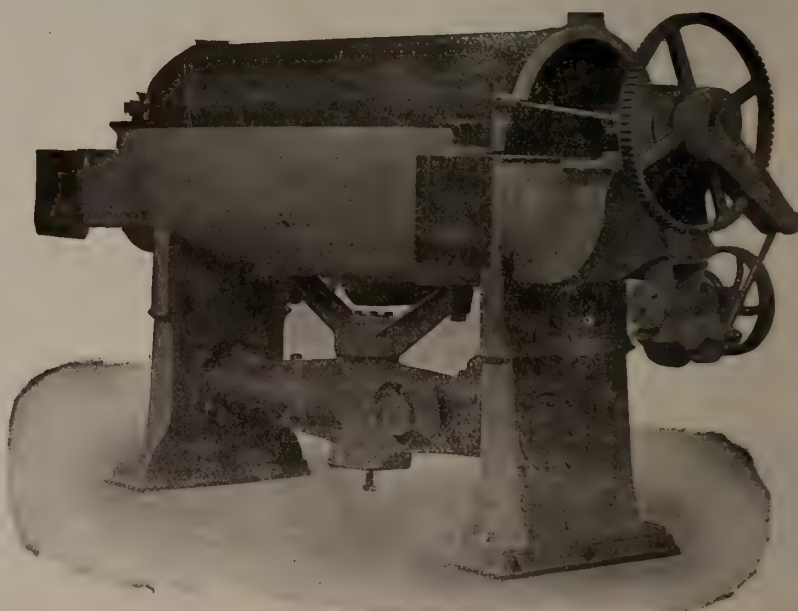
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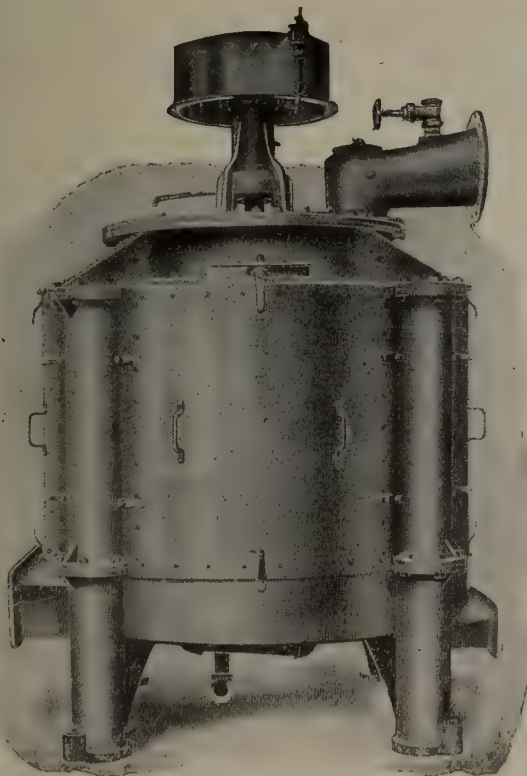
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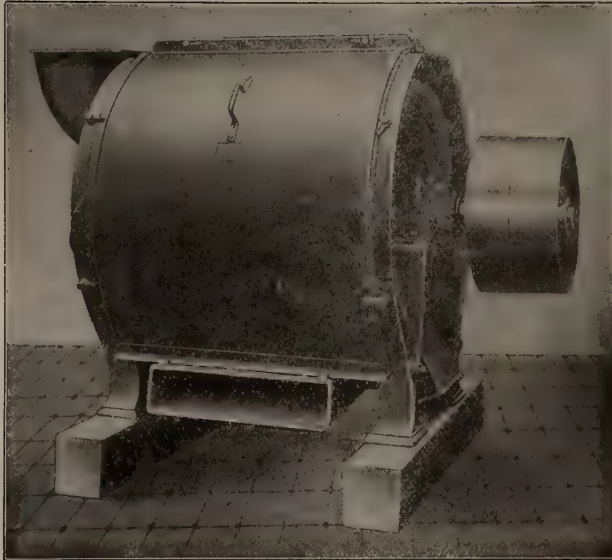


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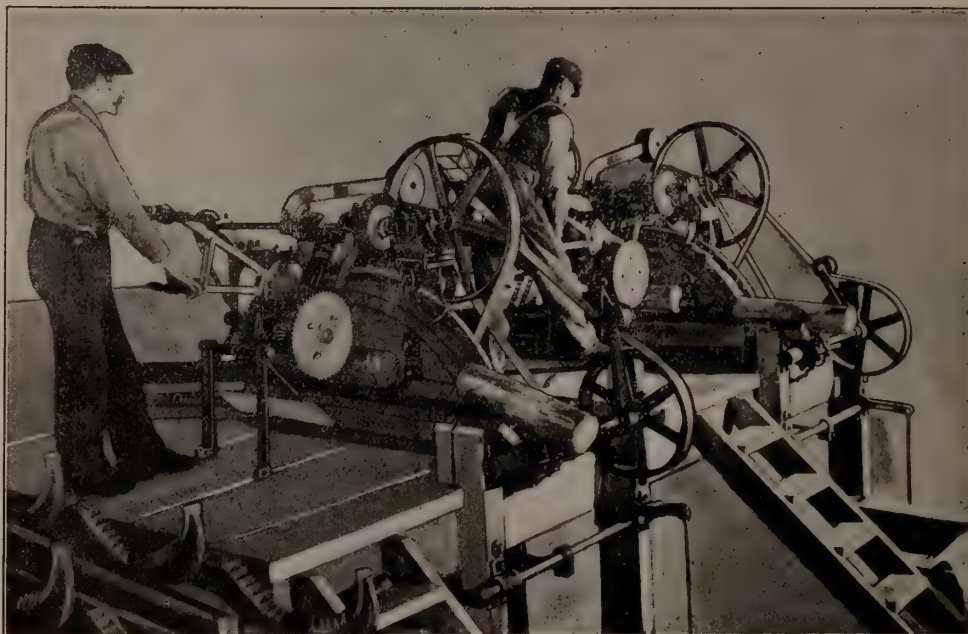
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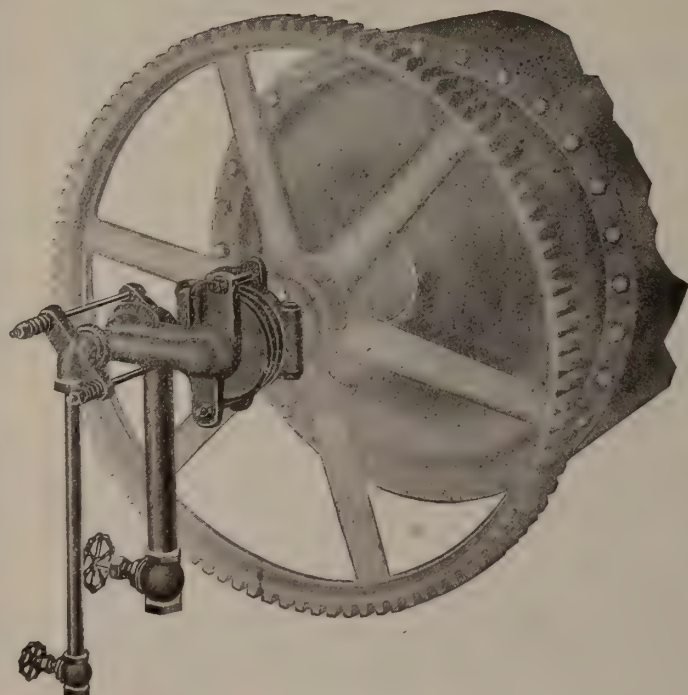
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Distance between frames

Number of piles to be laid.....

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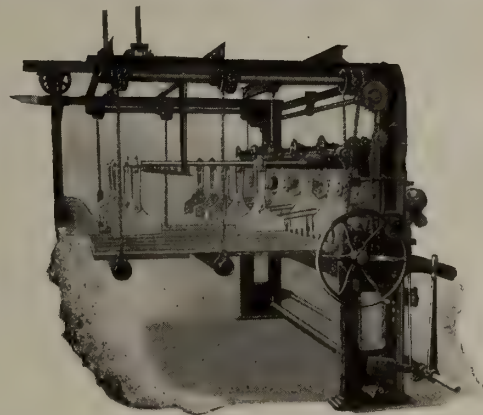
Make of cutter

Hand of cutter

Type of cutter.....

Name of mill

Address



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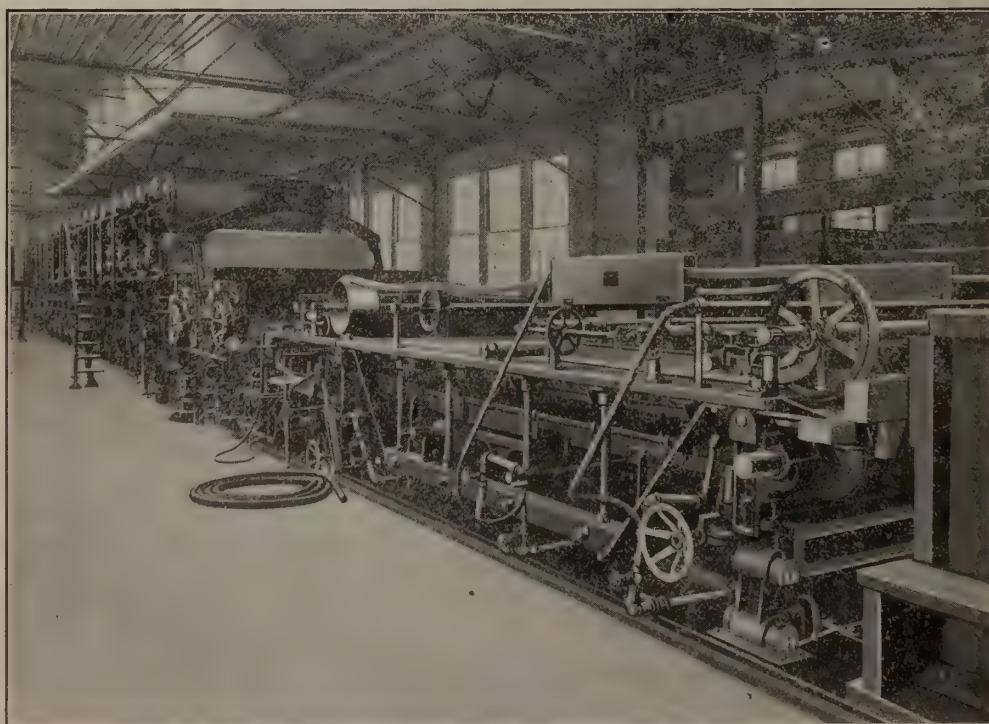
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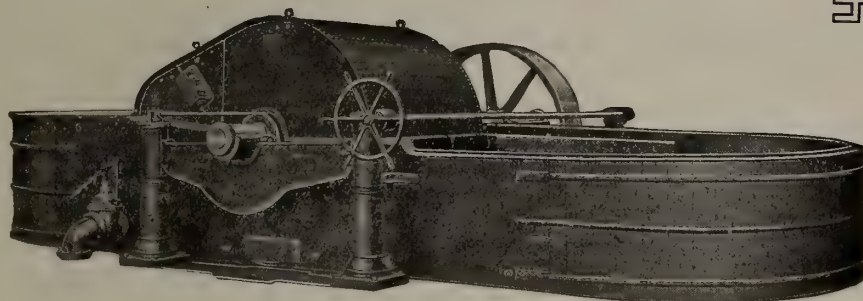
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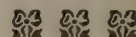
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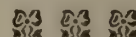
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A Semi-Monthly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades.

*Official Journal of the Technical Section of
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Published on the 1st and 15th of each month. Changes in advertisements should be in Publishers' hands ten days before date of issue. The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

SUBSCRIPTION to any address in Canada and Great Britain, \$2.00—United States \$2.50—Foreign \$3.50.
Single Copies 20c.

VOL. XIII.

MONTREAL, DECEMBER 1, 1916

No. 23

PROVIDING FOR THE FUTURE.

The questions of reforestation and aforestation are intimately bound up with the conservation movement. The last issue of the Commission on Conservation's Report, gives prominence to the movement recently undertaken by the Riordon Pulp & Paper Company for the replanting of cut-over forest limits. For years this has been done by the Laurentide Company under the able generalship of Mr. Ellwood Wilson.

Elsewhere in this issue appears a paper on Forestry in connection with paper mill operations, which was read by Mr. Wilson at a recent meeting in Montreal of the Technical Section of the Canadian Pulp & Paper Association. The paper is worthy of the careful perusal of every pulp, paper and lumber manufacturer on the Continent. It is one of the ablest summaries yet presented to this little understood and too lightly treated subject,—the providing of raw material for future requirements of pulp and paper mills. As Mr. Wilson ably points out; wild grains and wild fruits grow in various parts of the country, yet mankind does not depend upon these wild products for his food stuffs, but cultivates grains and fruits. Up to the present time, paper men have been content to reap the wild crop of paper making woods, and have gone on Micawber—like, trusting "for something to turn up." They have hoped that in some mysterious way there would always be perpetual supply of pulp wood, forgetting that a pulp mill cannot be picked up bodily and moved after the retreating supply.

It is an encouraging sign that such wide-awake Paper Companies as the Riordon, Laurentide and others, have seriously taken up the question of providing for future supplies of raw material, and it is to be hoped that scores of other limit owners will follow their good example.

PAPER PRICES.

Prices show no tendency to moderate. As a matter of fact, every indication points to higher levels, not only for news, but for book, writing, board and all other kinds of paper. The announcement made a few days ago by the International Paper Company that their minimum price for 1917 would be \$62.00 a ton or 3.10c per lb. is significant of the growing tendency towards higher levels in the paper market. The International manufactures over 25% of the total news in the United States, and when a large firm like this makes a decided advance in the price of their product, it is not done without due course. Mr. Dodge the President of the Company accompanied the announcement with many reasons justifying the advance. The reasons that hold good south of the Line are true to a still greater extent in Canada. The day of cheap paper is over, until at least, after the war.

WHAT IMPRESSED LI HUNG CHANG.

The Late Li Hung Chang after his tour of the world was asked what impressed him most on the American Continent. Without a moment's hesitation he said, "the great burned over areas of forest lands along the line of the Canadian Pacific Railway." He was not unduly impressed with the Flat Iron Building, Niagara Falls, or any of the other we boast about on this Continent. The thing that did impress him was the stupendous waste of our timber areas along the line of our great Trans-continental.

Li Hung Chang who was an astute observer of men and affairs knew that many parts of China were barren waste simply because the trees had been cut down. Rains and floods had then washed away the earth and left nothing but barren rock behind it. That same story has been repeated in all parts of the world

wherever men have foolishly denuded the land of its timber growth, and failed to plant new trees to take the place of those cut down. Surely there is a lesson for us in Canada from the observations of the famous Chinese statesman.

THE RECENT CONVENTION.

Pulp and Paper Magazine wishes to call the attention of its readers to the excellent series of articles published elsewhere in the paper dealing with the recent meeting of the Technical Section of the Canadian Pulp & Paper Association. At no time in the history of the industry were there better or more timely papers than those delivered at the recent gathering held in Montreal. We regret that owing in one case to an unfortunate delay, and in another case for pressure of space, we are unable to publish the excellent papers of Mr. Wolf of the Burgess Sulphite Company, and that of Mr. O. F. Bryant of the Forest Products Laboratory, Montreal. These two papers will appear in the next issue of the Magazine.

All the papers read at the gathering were not only of a high order, but the discussions on the problems presented were treated in a thoroughly practical manner. To an unusual extent the Technical Section of the Pulp & Paper Association combine the theoretical and the practical.

MAKING BRICKS WITHOUT STRAW.

According to a dispatch from Watertown, N. Y., a new process of making news-print without use of sulphite is to revolutionize the paper-making industry. The dispatch appeared in the daily press a day or two ago as follows:—

Watertown, N. Y., November 28.—A process of news-print paper manufacturing that is expected to revolutionize the paper making industry was proclaimed a success here today. It is known as the "Lefebvre system," and is the invention of Henry Lefebvre, of this city. Paper manufactured by this system in the mills of the St. Regis Paper Company near here was used by the Watertown Standard today in the first practical test.

The system consists of washing the ground wood fibres as they come from the grinders with pure water into even lengths ready to be made into paper, thus making the use of sulphite unnecessary, sulphite being one of the most expensive items of paper manufactured today.

Paper experts claim that the paper is of a better grade than that now used, and that a cheaper grade of ink can be used with equal results. The inventor says that his system of manufacture will reduce the cost of manufacturing one-half by abolishing the use of sulphite and doing away with much of the labor entailed thereby. Mr. Lefebvre was offered \$250,000 for his invention, by the International Paper Company, which he refused.

Many years ago the children of Israel in Egypt made bricks without straw. They had a pretty hard time of it, and rather than put up with the struggles any longer, emigrated and spent forty years wandering in the wilderness. This new Lefebvre process savors very much of the old method of making bricks without straw. We are quite willing to approach this matter or any other discovery with an open mind, but doubt exceedingly if the process contains one tenth of the good points claimed for it by the inventor or the enthusiastic scribe who penned the dispatch.

Ever since paper-making commenced on this continent experiments have been made to have groundwood fill the bill without any aid from sulphite, but it has never been found to have strength enough, or flexibility enough to adapt itself to the modern high speed news machines. It is a well known fact that there are hundreds of experiments made in our laboratories, but only one out of several hundred will have an economic value.

Europe has been working on this scheme for years, and up to the present time all our improvements in connection with fibres have come from that continent. They manufacture one million tons of fibre per year, and have never spared any expense either in factory or laboratory to devise schemes which would lessen the cost of their annual output. With all due respect to the inventor at Watertown, it looks very much as if his much advertised find was not of a practical nature.

PULP AND PAPER MAGAZINE.

(The Paper Makers' Journal, London, England).

This healthy and vigorous journal is growing apace, as it is the intention of the publishers to issue it as a weekly publication. This is an ambitious move because it requires an ingenious and progressive mind to keep up a high standard. Fortunately the magazine has been well served in this connection ever since its inception, and it merits the claim to its position among the "paper trade" publications of the world. The close association of the journal with the rapid technical developments in Canada, viz., the formation of the Canadian Pulp and Paper Society, the Forest Products Laboratory at McGill University, and the continuous attention given to technical literature has been a special feature of Pulp and Paper. The policy of the magazine will now be handed over to Professor J. Newell Stephenson who has been appointed Editor. The record of the work of the new Editor is a sufficient testimonial to his qualifications and ability, and we wish him every success in a cause which is not only worthy of a man's best, but which is one that always gives a sense of satisfaction when advocated with enthusiasm.

ARTICLE HELD OVER.

Owing to the necessity of reporting as fully as possible the proceedings of the Technical Section the article by H. R. Maddox on The Characteristics of Fibre has had to be held over for a future issue of the Magazine.

Technical Section Meets in Montreal

Unusually Fine Meeting November 24th and 25th

When the Technical Section of the Canadian Pulp and Paper Association meets, there can be no doubt as to the direct outcome. Idealism, hard commonsense, a deep interest in the welfare of the industry, an eye to the future on practical affairs that would do justice to the shrewdest of statesmen, good fellowship and civility, are all blended together to make one thoroughly satisfactory and wholly inspiring event.

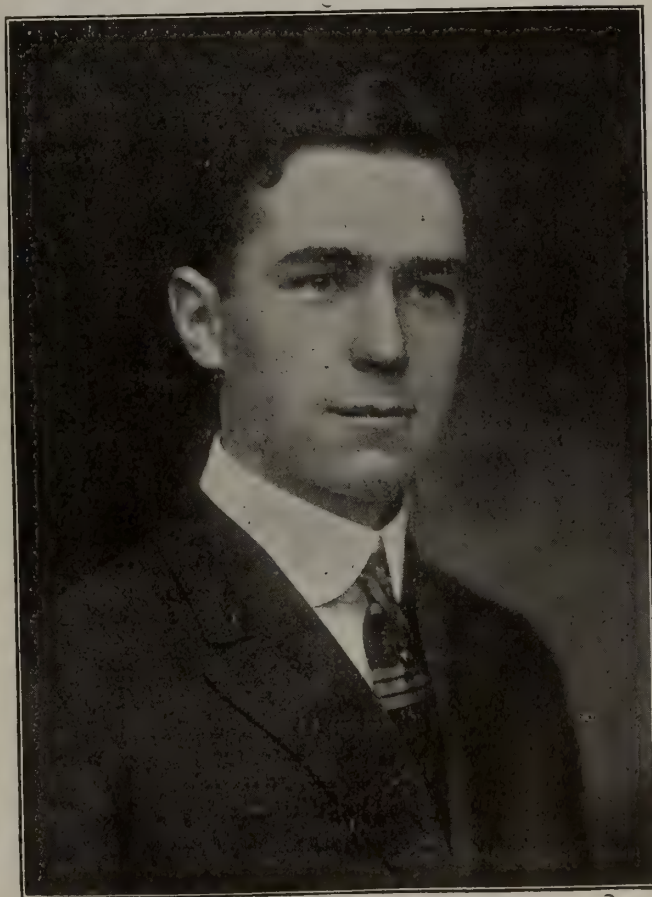
This was the case on Friday and Saturday the 24th and 25th November, when the men who "produce the goods" got together for their third gathering of the year 1916. Those who may look upon the Pulp and Paper industry from without, as judges of the commercial and industrial development of the Dominion, will have in the Technical Section of the Association, one of our greatest indications of basic prosperity. And as for the Section itself, every man who attended the meeting has come away with an enthusiastic belief in the greatness of mind and heart of all his fellow-workers.

The Section is prospering. The ultimate results which must accrue from such meetings as those of the week before last can never be measured. And then, aside from all the delightful experiences which every member had, who can doubt the efficacy, who can question the value of hearing the laughter from the "other end of the table" during the banquet? That was worth the trouble and expense of the whole event.

Dr. J. S. Bates had a fine audience to greet him when he called the meeting to order at ten o'clock on Friday morning. The register showed that the following were present:—

C. G. Arbo, Riordon Pulp & Paper Co.
John S. Bates, Forest Products Laboratories.
G. M. Beall, Riordon Pulp & Paper Co., Hawkesbury.
A. O. Bowness, E. B. Eddy Co., Ltd.
O. F. Bryant, Forest Products Laboratories.
Chas. W. Burroughs, Riordon Pulp & Paper Co.
C. F. Buss, Provincial Paper Co.
R. H. Campbell, Director of Forestry, Ottawa.
Roy Campbell, Secretary, Canadian Pulp & Paper Association.
W. B. Campbell, Forest Products Laboratories.
T. Linsey Crossley, J. T. Donald & Co.
D. Daverin, Provincial Paper Co.
J. A. DeCew, Montreal.
G. W. Dickson, Laurentide Co.
J. M. Falkner, Riordon Pulp & Paper Co.
T. Folin, Belgo Canadian Pulp & Paper Co.
Thos. Ford, J. Ford & Co.
Joseph A. Fux, Waterous Engine Works Limited.
C. C. Gilis, Montreal Engineering Co.
W. German, Provincial Paper Co.
Martin L. Griffin, Oxford Paper Co.
G. Hanberg, Riordon Pulp & Paper Co.
J. J. Harpell, Industrial & Educational Press.
H. Bercham Hart, British American Wax Paper Co.
J. J. Herb, Interlake Tissue Mills Limited.
Bryant M. Hess, Hess W. V. Company, Chicago, Ill.
E. S. Holloway, Canada and Gulf Terminal Railway, Matane, Que.

R. W. Hovey, Forest Products Laboratories.
W. J. Hussey, Spanish River Pulp & Paper Mills.
Biarne Johnsen, Forest Products Laboratories.
Prof. H. O. Keay, McGill University.
H. N. Lee, Forest Products Laboratories.
Arthur D. Little, Boston, Mass.
H. F. Lyons, Canada & Gulf Terminal Railway.
Chas. Mealkey, "Soo", Ont.
E. K. Mansfield, Forest Products Laboratories.
J. O. Mason, Laurentide Co., Ltd.
Jos. G. Mayo, Pulp & Paper Department, Canadian Fairbanks-Morse Co.
R. A. McInnes, Abitibi Power & Paper Co.
A. G. McNicol, Forest Products Laboratories.



DR. J. S. BATES,
Chairman Technical Section.

J. L. McNicol, Forest Products Laboratories.
T. J. Murer, Riordon Pulp & Paper Co.
Maurice Nilson, Belgo Canadian Pulp & Paper Co.
A. G. Pounsford, Ontario Pulp & Paper Makers' Safety Association.
E. B. Slack, Riordon Pulp & Paper Co.
J. Staler, Belgo Can. Pulp & Paper Co.
J. N. Stephenson, Pulp & Paper Magazine.
V. A. Strand, Riordon Pulp & Paper Co.
R. O. Sweezey, Montreal Engineering Co.
C. B. Thorne, Riordon Pulp & Paper Co.

S. Wang, Riordon Pulp & Paper Co.
 Ellwood Wilson, Laurentide Co., Ltd.
 R. B. Wolf, Burgess Sulphite Fibre Co., Berlin, N. H.

The minutes of the last meeting and other details were dealt with quickly, the Chairman of Committees reported on their activities. First was Mr. O. F. Bryant, as Chairman of Literature and Statistics. Mr. Bryant reported as follows.

REPORT OF COMMITTEE ON LITERATURE AND STATISTICS.

At the last meeting of the Technical Section, June 29-30 your Committee reported that arrangements had been made with the Technical Association of the Pulp and Paper Industry whereby the latter Association would sell the abstracts of current literature to the Pulp and Paper Magazine to be printed in that magazine.

Soon after the meeting it was thought advisable by the Technical Association of the Pulp and Paper Industry to co-operate with our Section in abstracting literature and with this in view one of their committee met with the Chairman of your Committee to arrange some suitable system of co-operation. After considerable study it was decided that the most feasible scheme would be to have the respective committees of the Association and Section act as an editorial committee selecting the articles to be abstracted arranging to have the work done and editing the abstracts. It was decided to ask the Pulp and Paper Magazine to pay for half the expenses incurred and to ask "Paper" to pay the other half.

The abstracts would be sent to both Magazines to be published simultaneously. This arrangement was brought to the attention of the Managing Director of the Industrial and Educational Press who agreed that the Pulp and Paper Magazine would pay half the expenses.

When this plan was brought before the Technical Association of the Pulp and Paper Industry it was thought that the time was not right for acting on the matter and it was deferred to a future date. In the meantime arrangements were made to handle a certain amount of the work by calling upon volunteer abstractors.

As the matter stands now we are not much nearer a solution of the problem than at the beginning. This Section is much too small to handle the abstracting through a volunteer system and we are not strong enough financially to have all the current literature abstracted by paid abstractors.

Until such a time we are in a position to undertake the abstracting of all the current literature or until such a time as arrangements are made for co-operation in this work it may be possible for this committee to be of some value to the Section by noting the most important articles in foreign periodicals and having them abstracted or translated in full and distributed to the members. This might be handled in some such manner as Mr. G. F. Steele is doing for the Newsprint Manufacturers Association that is, by sending out circular letters containing such abstracts or translations to the member of the Section or by printing them in the Pulp and Paper Magazine. Carrying out the work by circular letters would throw the whole cost on the Technical Section whereas printing the abstracts and articles in the Pulp and Paper Magazine would have

the advantage that the magazine would probably be willing to bear part and possibly all of the expense of abstracting and translating.

O. F. BRYANT,

Chairman Committee on Literature and Statistics.

The discussion which followed showed that the members considered it of the very highest importance that no duplication of work on the part of the Canadian and American Sections should take place, and that there should be co-operation in as far as possible between the two Associations.

Mr. T. Linsey Crossley reported for the Committee on Technical Education, as follows:

REPORT OF COMMITTEE ON TECHNICAL EDUCATION, NOVEMBER 24TH.

Your Committee begs to report as follows on the various activities which it has recommended and endeavoured to put into operation.

Room in Mill for use of operatives in studies or technical reading—this recommendation met with the approval of most of those who answered our letters on the subject, and some mills stated their intention of putting the plan into practice. We have asked for reports from these mills, but at the time of writing have not received word. This idea is regarded as a first step, to be followed, whenever possible, by work in school building. In small communities, however, where possibly one mill only is in operation, we consider the Mill room superior.

Question and Answer Column.

We regret to announce that little effect was obtained in this branch. A set of questions, ready for the current issue, has been lost somewhere in the mail. Several questions have been attended to, but we must have a little more interest in this useful line of work. Questions should be of everyday happening. One question submitted was, whether or no it was likely to be a paying investment to build a mill in a certain locality. This is obviously due to a misinterpretation of the object of the department.

Actual School Work in Mill Centers.

We are able to report a most gratifying development of this line of work in the town of Merritton, Ontario.

Mr. George Carruthers of the Interlake Tissue Mills has, for some time, been considering the question of the educational status of the men in the mills. During several months past. Mr. Carruthers and Mr. Pounsford of this Committee have been endeavoring to arrange for night-school work at Merritton, conferring with Doctor Bates and the Chairman of your Committee. The co-operation of the local teaching staff has been secured. The School Board has been interested, and has promised to put electric wiring in the High school and give use of building for night work. Mr. Carruthers has conferred with managers of the mills, and, as a result, a meeting of managers and superintendents of the mills in the district was held, a committee was formed, and it is expected that, shortly after the New Year, a start will be made on Canada's first school for papermakers. At first, it is planned to take up elementary work in reading, writing, arithmetic, physics, draughting and chemistry. In addition there will be a series of illustrated lectures on the various branches of Paper and Pulp mill work. The local mills will bear the financing, and it is hoped that a Provincial grant can be obtained.

Mr. Carruthers and Mr. Pounsford deserve hearty thanks for the time and energy they have given this matters

The results and experience obtained at Merritton Mill, we hope, lead to similar work in other centers. We expect later to arrange for scholarships to some central industrial school, where further Technical work may be done.

Respectfully submitted in behalf of Committee on Technical Education,

T. LINSEY CROSSLEY,

Chairman.

That Technical Education is taking a real hold among the men of the industry, is indicated by the report of Messrs. Thorne and Daverin from the Thorold and Merritton district, that a school has been inaugurated through the initiative of Mr. George Carruthers, of the Interlake Tissue Mills. The Thorold School Board fixed up the school with electric light, and when on Friday, 17th November, the school was

Town of Thorold has become so interested that it is willing to assume the other third of the expense, and the only expense that the mills would have to meet, is for equipment. At the present time the Thorold School is teaching Electricity, Mechanical Drawing, Arithmetic, English, etc., and the universal opinion is that this is one of the finest moves that has ever been made in the Pulp and Paper Industry.

Mr. J. A. DeCew as Chairman of the Committee on Standards, reported as follows:

REPORT OF COMMITTEE OF STANDARDS.

Nov. 24th, 1916.

TO THE TECHNICAL SECTION OF THE CANADIAN PULP & PAPER ASSOCIATION.

(J. A. DeCEW)

To,

Mr. John S. Bates,

Chairman of Section,

Montreal, Que.

Dear Sir:—

Since the Summer Meeting at Niagara Falls, your Committee have published results of their work in establishing Standard Methods of Analysis for Sulphate of Alumina, Rosin and Rosin Size. Several other methods of analysis were prepared which were practically identical with those already published by the Committees of the Technical Paper Association of the United States.

Before publishing a series of analytical methods which are similar to those that are already very well standardized and adopted (subject to future alterations and corrections) your Committee would like to obtain from their Council and Members of the Section, their advice regarding the best methods to follow in utilizing the work already done by other Technical Societies. Between the investigations which are now being undertaken by the Society of Chemical Industry, as well as the American Association of Paper Chemists, there may be certain well defined lines of investigation which will not duplicate or conflict with the work of these other societies. In view of the large amount of data which had already been presented, with reference to standard methods of testing, this Committee would recommend that one of our regular meetings will be set aside for special discussion of this subject, in which each member will come prepared to criticize or offer amendments to any of the methods which have already been published. An entire meeting could very well be filled with discussions of these methods, as it covers all the testing operations in which the paper chemists are engaged. Your committee feel however, that the time is now ripe for the adoption of certain standard methods of sampling and testing pulp for moisture content, as there is likely to be more controversy in this connection within the next year, owing to the increased cost of the materials involved and the consequent necessity for great accuracy.

At the present time, we invite any recommendation or discussion on the subject so that the methods finally suggested for adoption will conform with the general views of our Association.

Yours truly,

(sgd) J. A. DeCEW,

Chairman of Committee on Standards.



MR. C. B. THORNE

of Riordon Company. He is an enthusiastic advocate of technical training.

opened, there were fifty men in attendance. On the following Tuesday there were seventy-five. Mr. A. G. Pounsford, who has taken a keen interest in the work, reported that the Supervisor of the Ontario Technical Schools was quite enthusiastic about the project, and was anxious to get the opinion of the Technical Section as to the possibilities of further development in other centres along these lines. Mr. Pounsford reported that the Province of Ontario will take care of two-thirds of the expense of any section, and the other third would be paid by the mills and the men. However, in the case of the Thorold School Section, the

Mr. DeCew's proposals as to the development of testing of Pulp drew forth an interesting discussion. The consensus of opinion of the members was that this was one of the most important matters on the technical side of the industry that could be undertaken. Increased activities along these lines are expected in the near future.

Other Business.

The Chairman took up other routine matters coming from the Executive, which may be briefly outlined as follows:

It has been thought the best to leave the dues for full membership at \$3.00 until the February meeting. The question of the Government grant has also been decided to stand over for the present. The question of a paid Secretary has been left over until the February meeting. Mr. C. B. Thorne is taking very active steps in connection with increased membership, and good in the near future. Mr. Thorne is taking care to get the very best men from the industry interested in the



MR. DAN DAVERIN,
of Provincial Paper Company, who is largely responsible for the opening of the Paper School at Thorold, Ont.

Section. Mr. Thorne is also going to a great deal of trouble to make the collection of samples from the pulp and paper industry unusually good for the February meeting. He reports that progress has been very satisfactory so far, the members of the industry being very willing to assist in this regard.

In the question of increased co-operation with the American Association, it has been decided that while the two Associations would probably secure results more satisfactory to both, if they remained distinct for the time being, the warmest co-operation between the members should be encouraged, and that members from both Sections should attend the meeting of the other Section. Particularly in the question of abstracting from the current periodicals and books, a distinct advantage is to be gained in co-operating. Future developments along these lines will be forecast by the Committee on Literature and Statistics in the near future.

Advisory Committee to Forest Products Laboratories.

Dr. Bates also outlined the desire of the Forest

Products Laboratories to have an Advisory Committee from the Technical Section. This proposition was put into concrete form by a letter from Dr. Bates which was read at the meeting, as follows:

"An invitation is hereby extended to the Technical Section of the Canadian Pulp and Paper Association to elect an Advisory Committee to co-operate with the Division of Pulp and Paper of the Forest Products Laboratories of Canada.

"Some of the functions of such a Committee may be outlined as follows:—

(a) To suggest technical investigations of general and vital interest to the pulp and paper industry which should be undertaken by the Forest Products Laboratories as time and facilities permit.

(b) To go over the plans of each investigation when prepared and to advise from time to time during the progress of the investigations.

(c) To arrange for mill tests when desirable to supplement the work which can be done at the experimental paper mill on a laboratory or semi-commercial scale.

(d) To assist in procuring commercial information which would be useful in connection with the investigations.

"This department feel that a closer co-operation between the laboratories and the industry will result in mutual benefit to all concerned."

On motion by Mr. Daverin, seconded by Mr. Dickson, it was resolved:

"That the Technical Section of the Canadian Pulp and Paper Association accept the invitation of the Forest Products Laboratories of Canada to elect an Advisory Committee to co-operate with their Division of Pulp and Paper.

"That the various branches of the industry should have representation, viz: Sulphite, Groundwood, News and Wrapping Sulphate and Sods, High Grade Papers the choice of committee men should depend partly on the investigation in hand and in view at the Forest Products Laboratories.

"That the members of the committee be elected at the annual meeting to hold office for one year and members shall be eligible for re-election.

"That the first committee, to hold office until the annual meeting in February, 1918, be as follows:

- Mr. C. B. Thorne, Riordon Pulp & Paper Co., Ltd., representing sulphite pulp.
- Mr. F. A. Sabbaton, Laurentide Co., Ltd., representing groundwood and news.
- Mr. H. Helin, Wayagamack Pulp & Paper Co., Ltd., representing sulphate and soda pulp.
- Mr. S. F. Duncan, Provincial Paper Mills Co., Ltd., representing high grade papers.

"This Committee shall have powers to add to its number if desirable by consulting the Council of the Technical Section."

Reading of Papers.

There being no further business, the meeting proceeded to the reading of papers, the first one being by Mr. Ellwood Wilson of the Laurentide Company.

Mr. Wilson's paper brought forth most spirited and enthusiastic discussion, all indicating admiration of the work which he is carrying on.

As it was stated quite clearly that the future of the industry depends upon the supply of raw material and that the extensive tests which Mr. Wilson is making in planting trees on the limits of the Laurentide Company, prove definitely that any waste in the fore

is striking at the roots of the industry, the following resolution moved by Mr. Thorne and seconded by Mr. Crossley, was unanimously carried.

"Resolved that the Technical Section of the Canadian Pulp and Paper Association begs to urge upon the Honorable Minister of Lands, Forests and Mines of Ontario, the absolute necessity from the standpoint of the security of the industry, of establishing in Ontario, an efficient non-political fire protection service and the passing of a settlers permit law."

(Members of the section will be glad to know that the communication of this Resolution to the Minister of Lands and Forests, of Ontario, has brought a letter from the Minister, stating that the members of the Technical Section will be interested to know that the delegation of the various Timber, Pulp and Paper, and other interests organized by the Canadian Forestry Association, were very much pleased with the announcement of policy made to them at the time of their seeing the Minister on the 28th ulto).

At 1.15 the members adjourned to Luncheon and at 3 o'clock resumed the reading of papers, when Mr. R. B. Wolf of the Burgess Sulphite Fibre Company, Berlin, New Hampshire, gave an address upon "Mill Efficiency."

It is safe to say that there has seldom been a paper presented before a professional organization which aroused more interest and enthusiasm than Mr. Wolf's address. Two hours-and-a-quarter of the "meatiest" kind of talk gave the members a new alignment of mill problems, of questions of maximum efficiency. The discussion which followed indicated very clearly that Mr. Wolf had touched the springs of ambition and the underlying motives in the minds of his audience. This paper will be reproduced in the next issue of "Pulp & Paper Magazine."

The Dinner.

At 7.30, forty members sat down to dinner, with Mr. Ellwood Wilson acting as toast-master. He called upon Dr. John S. Bates to welcome "Our Guests." Mr. R. B. Wolf and Mr. Martin L. Griffin replied, expressing appreciation of the work of the section and extending a cordial welcome to the members of the Section to be present at the gatherings of the American Technical Section.

Mr. Roy Campbell gave a brief outline of some of the features of industry and preparations for continuing the war which he had noticed in Britain, France and Italy on his recent trip there. The toast of "The Boys at the Front" was loyally responded."

Mr. C. B. Thorne toasted the Technical Section and the profession. He expressed the opinion that in the hands of the technical men lies the future of the Pulp and Paper industry to a far greater extent than is generally considered.

Professor H. O. Keay indicated his ideas upon the proper lines of development of efficiency in the industry, laying particular stress upon the necessity of a broad basis in technical advancement.

Mr. A. G. Pounsford spoke briefly of the powers of the Safety Movement to make technical education, and greater co-operation between the scientific or technical man and the men in the mill.

Mr. John Stadler, of the Belgo Company, gave a very pleasing address upon his general impressions of progress in the industry, while Mr. Dan Daverin retired modestly for fear that he would be called upon

to make a speech. Shortly before 11 o'clock the meeting adjourned to resume in the morning.

Saturday Morning's Session.

At Saturday morning's session, Mr. Olivier Rolland read a most interesting paper upon "Some Notes on European Institutions in Pulp and Paper Manufacture." The paper is being reproduced in this issue.

Mr. O. F. Bryant of the Forest Products Laboratories, then delivered an address upon "Pulpwood Measurements and Some Factors Involved in Chipping and Baling Pulpwood." The discussion raised by Mr. Bryant's paper tended to show that in the future, much greater attention will have to be given to the development of woods operation as providing material of the very highest and most advanced grade for the use of the pulp mill. Present methods of logging embarking, etc., will perhaps have to give way to a more scientific method of securing raw material for the mill. Mr. Bryant's paper will be reproduced in the next issue of the magazine.

Mr. R. H. Campbell, Dominion Director of Forestry, addressed the meeting briefly, congratulating the members upon their progress along the lines of increased professional knowledge.

Forestry in Connection with Pulp Mill Operations

By ELLWOOD WILSON.

Forester, Laurentide Paper Co., Ltd.

(Paper read at the meeting of the Technical Section of the Canadian Pulp and Paper Association).

Forestry is the most important thing in connection with pulp mill operations. Just as the raw material is the most important item in operating a plant, so the production and delivery of that material is the most important operation. Forestry is the science and art which concerns itself with the production of wood. From the time when timber lands are bought for the supply of the pulp and paper industry until the wood is delivered into the mills this art must be invoked. It is the business of the forester to make sure that in buying lands they shall be properly located so that the wood can be brought cheaply to the mills, to see that there is actually timber on them of the right sort and in sufficient quantity. After purchase to make maps and a careful inventory of the kinds and amounts of timber. To plan and put into effect a proper system of fire protection, to lay out the areas each year over which timber shall be cut to supply the yearly needs of the mill and to decide how much shall be taken so that not only shall the felling and delivery be as cheap as possible but also so that enough trees shall be left to insure a proper future growth and supply. To see that there is no economically avoidable waste of material, to see that the cut is delivered to the mill at as low a cost as possible and then to devise means to reduce waste in the mill itself.

Like every new country we here in Canada have established industries and commenced to use up our natural resources without any definite ideas as to the quantities available. In the industry in which we are all interested the beginnings were small and the amounts of woods consumed were insignificant. Often,

enough wood could be cut right around the plant to run it for a year or two. Profits were precarious and no thought was given to the future. Even after the industry developed not much thought was given to the supplies of raw material, it was simply taken for granted that there would be wood for all time. While elaborate precautions were taken against fires in the mills, the flames ran through the limits unchecked, and this continued until 1908 in this Province, when the Laurentide Co., Limited, started a real fire protective system which grew into the St. Maurice Forest Protective Association. Every year the mills spent thousands of dollars on careful inventories of the stocks in their store houses but not a cent to find out how much timber they had on their limits and to-day only four of the large companies in this Province know how much timber they have or how much of their territory has been burnt. Apropos of this, a large American Company purchased a block of limits some years ago and about a year after the deal was put through, I was asked to look over one hundred square miles of this tract and I found that over eighty square miles had not one stick of timber on it.

Every possible labor saving device is installed in the mills, experts of all kinds are called in to eliminate waste, thousands of dollars are spent on labor saving machinery and everything possible is done to cut down the cost of production, but the operation of getting out the wood and getting it to the mill is still carried on as it was fifty years ago.

Our forests have been treated like mines from which we expected to draw all the raw material we wanted and if we ever gave the matter of their exhaustion a thought it was to say, "well the young trees are growing up all the time to replace those we cut." Unfortunately this is not the case for in a virgin forest the trees of different species which make up the stand have reached a state of equilibrium where the growth is balanced by the death and decay. On cut over lands, the shallow rooted spruce and balsam trees after being thinned out blow down in large quantities, the letting in of a large amount of light gives the hardwoods an opportunity of which they quickly avail themselves, to seed in, and the young hardwoods grow up so quickly that they crowd out the softwoods. In our examinations of cut over lands we find that if left to grow for thirty years they will not yield more than three cords per acre which will make the cost of cutting them very high.

In Europe more than 100 years ago the same conditions that exist on this continent to-day confronted the people and after much experiment and many failures they learned how to look after their forests and we have the benefit of their experience. If we are wise we shall take warning and follow their example and adapting their knowledge to our different conditions we will take time by the fore lock.

Already there is anxiety in the United States about the supply of pulpwood for the future and many firms are drawing on Canada and other have already provided themselves with large areas of our timber lands. The pulp and paper industry has grown by leaps and bounds and with the increasing uses to which wood pulp is put and the growing demand for it, we should take careful stock of our resources and utilize them wisely and with an eye to the future. A pulp or paper mill can not be taken down like a portable saw-mill and moved from one place to another as the supply of

timber is exhausted, millions of capital are invested and only by long term operation can it be made to pay.

I do not wish to be taken for an alarmist and I am far from pessimistic but I do think it is time for us to stop guessing about the amount of timber we have, and to face the facts, make a careful inventory and utilize our forests intelligently. My own conclusions are based on facts, carefully ascertained.

The question of accessibility of wood supplies plays an important role in the cost of raw material, in the case of wood, the extra expense of taking men into the woods long distances, of transporting provisions first by rail then by sleighs and the long drives on the rivers all add to the cost per ton of paper. This difficulty has been aggravated by our methods of logging. At first all the timber was cut off around the lakes and along the rivers for say a half a mile and this was gradually extended until the haul became too long to be economically possible. Also timber in difficult places was left. The usual method of logging which is still in force nearly everywhere in Quebec is to let a contract in a predetermined district to a jobber for a certain number of thousand logs. The number of logs that can be cut is guessed at and is finally settled by compromise with the jobber. Usually there is more than enough timber in the district assigned him and he proceeds to lay out his roads radiating from his headquarters and to cut as close to these roads as possible often leaving quite large amounts of timber between them, which necessitates going back to this same section again and as the timber left is the most difficult to get out a higher price must be paid.

Unfortunately, until within the last six years the river drivers invariably set fire to the slashings in the spring and burnt off the timber, so that one could not go back at all. The course of practically every drivable stream is burnt and I estimate that about 30 p.c. of the St. Maurice Valley has been burnt over in the last fifty years and about 16 p.c. of this area has not yet commenced to reproduce and the balance will not produce a crop for many years.

The condition of the forests is a matter about which the average man does not have any very clear ideas. In the first place we have very little forest which is composed of just one species. In swampy places we have pure stands of black spruce, growing thickly, hardly ever attaining a larger size than ten inches and most of the trees of great age owing to the unfavorable conditions of growth. I have often seen trees five inches in diameter over one hundred years old. Then on sandy plains we have dense stands of jack pine which has usually come up after a fire and which is so crowded that the tree are very tall and spindling and will never reach commercial size. On large areas too, over which fire has passed we have stands of aspen and white birch neither of which trees growing under such conditions have much merchantable value as they seldom reach large size, are generally diseased and comparatively short lived. Our really good forests are composed generally of balsam 61 p.c., white birch 17 p.c., white spruce 15 p.c., black spruce 4 p.c., maple 2 p.c., cedar .5 p.c. other hardwoods .45 p.c. and white pine .05 p.c. Of this about 32 p.c. of the total stand-spruce and balsam can be cut above the Government diameter limit. The way the cutting has been carried on in the past most of the white and black spruce and some of the balsam has been taken off. Where a good deal of light has been let in and conditions were otherwise favorable the balsam has come up in dense

groups in which the struggle for existence is so great that the trees rapidly become diseased and the resulting stand is of small value. Where the conditions are more favorable for hardwood reproduction these trees seed in thickly and make it very difficult to obtain reproduction of softwoods. Our present methods of cuttings are slowly but surely turning our forests from coniferous to hardwood ones and the coniferous will have a difficult time to re-assert their supremacy over the broad leaved trees. We are leaving the whole matter to chance and unquestionably our forests are deteriorating. The leaving of the debris from lumbering not only increases the fire hazard but provides ideal conditions for the growth of harmful insects and fungi. It is in a sense like leaving unburied corpses in a community.

Now the aim of the forester is to regulate all these matters. The proper cutting of a forest, unless it is cut clean, is a matter which requires, experience and above all good judgment, the balance is delicate and the results of a wrong system of cutting often take very many years to correct. The ideal at which we aim is to make every acre bear as many trees as it will carry of the most useful sorts for the purpose in view and to keep up a sustained yield. This may mean that more trees must be left than under the present system with a slight increase in present logging expenses but a large decrease the expense in future operations. In changing over from an unregulated to a regulated forest the expenses for logging will be larger for the first felling but thereafter should gradually decrease as the stand of merchantable timber increases.

We also want to utilize every possible tree. At present we have a large amount of hardwood which is left in the woods and as I have said before hinders the growth of the coniferous trees. It is quite possible to use this for pulp with the soda or sulphate processes but I understand that it cannot be utilized with the sulphite process. I visited a mill in Austria which used beech entirely and made a good quality of pulp. There is, it seems to me, no reason why hardwood should not be used for ground wood, the fibre is, of course, shorter, but it ought to make a good filler. The objections are that it is difficult to float and some difficulty might be encountered in barking it. The first difficulty can be overcome by spring cutting and the second might be overcome by peeling in the woods as is done with poplar. This would lengthen the time over which our supply of spruce and balsam would last and add much to the value of our timber limits. The Laurentide Company in co-operation with the Forest Products Laboratories hopes to try some experiments along these lines this winter.

Then there is the elimination of logging wastes which are at present larger than they should be. The lumber companies usually take logs from a tree until a diameter of six inches is reached but the pulp companies take down to four inches. However, a very bad custom still holds of using logs thirteen and one half feet long and as it is often impossible to get a log that length out of a tree top much good wood is wasted. We have measured up over a two thousand tops and we find that in the St. Maurice Valley about 31,000 cords of wood is wasted each season. Then too stumps are cut far higher than is necessary and the waste from this source approximates 10,000 cords per annum. A large amount of good pulp wood is wasted in building camps for the men and much is still used

for roads although this last waste has been much reduced.

In the mill we still have sawdust, slivers, bark and the waste liquor to find profitable uses for.

With the growing scarcity of timber and the increasing distance one must go for it with a corresponding increase in costs, our attention must turn to planting. A plantation offers the following advantages. A much smaller area of forest since in planting we use all the land and having only the useful species our yield is very much increased, eight to ten times. The lands near the mill can be utilized and instead of river drives of one to two hundred miles we would have only twenty-five or thirty miles and logging railroads could be profitably built and the wood brought from the stump to the mill doing away with our huge wood piles, with the expense of piling and unpling, the loss of interest, the deterioration of the wood and the danger from fire. With our timber areas concentrated the expense of fire protection and administration would be much reduced and labor afforded for a large number of men. Owing to the much larger amount of wood per acre the logging costs would be much reduced and as only the best trees would be allowed to reach maturity the quality of the wood would be much improved. We would have a steady supply for all time and a uniform cost figure and by having our forests near the mill means could be devised to use up the branches and probably even the needles so that like the packing industry which uses everything of the hog but the squeal, we could use all of the tree but the smell.

That this is an economic possibility I am quite convinced as we can plant trees now for \$8.50 per acre. where we have to pay \$4.20 for our stock. This we can raise for \$2.80 per acre making a further reduction. Taking the former figure at 6 p. c. compound interest and we can raise wood for \$5.00 a cord which is cheaper than it can be bought to-day.

Some Notes on European Institutions in Pulp and Paper Manufacture

OLIVIER ROLLAND,

Mr. Chairman, Gentlemen:—

I have often heard the opinion that as a complement of general and technical education it is advisable to travel and visit Institutions of foreign countries. For this reason I felt convinced that a voyage in England and the Continent amongst some Institutions connected with the paper industry, would be an appropriate subject to discuss with the Technical Section. Technical science is a neutral ship, which will even allow us to go in Germany.

Most of these visits which I am about to describe, I made in the Summer of 1914, during the weeks which preceeded the critical moments of the declaration of the war. If I happen to touch the subject of war in the course of my paper and if my sympathies are apparent it will only seem natural to the Canadian auditors to whom I address. One thing I regret is, that I shall have to speak of myself in connection with these visits, and this personal note is unpleasant also to me, but necessary in the circumstances.

We shall pay together a flying visit to the following Institutions:—

The Municipal School of Technology, Manchester, England.

The Pulp and Paper Makers Association of France.

The French Magazine: The Official Organ of the pulp and paper industries.

The paper mills of the DeMontfolfier, Luquet and Co., situated in Annonay.

The French school of paper making of Grenoble.

The Engineering firm of Messrs. E. & M. Lamort, Vitry-le-Francois, mechanical constructors and screen manufacturers.

The Zum Bruderhaus Papier Fabrik of Dettingen, Wurtemberg, Germany, and finally the Leipzig Exhibition.

Concerning a few of the above I have already written in the Pulp and Paper Magazine. But there are some additional notes in this lecture, which I thought might be of interest.

The Municipal School of Technology, Manchester.

My first trip to Europe in the month of September, 1904 was to attend the Municipal School of Technology of Manchester, where I was a student for two years. The regular course in the paper making as well as for the other courses of Mechanical engineering; electrical engineering; municipal and sanitary engineering; architecture; chemistry of textiles; brewing, textile manufacture; is of a duration of three years. After which you may be graduated with the title of Bsc. Tech.

The school is also called the faculty of technology of the Victoria University of Manchester. It is a nice large, well-equipped, new building and is a development of the old Mechanics Institute of Manchester. This school, it is interesting to note, has been built up through the initiative and funds furnished by the City of Manchester and has cost over one and a half million dollars. They associate to the promoters list, the name of Sir Joseph Whitworth, who has given the land for the erection of the school in Sackville Street, which was formerly occupied by the Whitworth Engineering Works. When the building of the school was decided, a committee of enquiry visited part of the world to note what was best and apply it to the intended construction which was completed in 1903; a building six stories high, covering a plot of land, 6,400 square yards. Mr. J. H. Reynolds was appointed principal. A second and smaller building where is now the paper machine and the paper testing laboratories together with the machinery for calico printing, is contiguous to the main building.

Mr. Hübner is the head of the paper department and gives himself the lectures on practical paper making, also gives directions for the laboratory work. When he has a special interest in the experiments he supervises the work himself. In ordinary cases an assistant who is a practical paper maker, a former employee of a paper mill, takes the direction.

For the matters of general education, as chemistry; physics; drawing; mechanics; electricity, the students join the general classes together with students of the other courses of applied chemistry. The course of practical paper manufacture comprises the following:

Raw and manufactured fibre yielding substances; microscopical and chemical characteristics of the fibres; cellulose; rags and their chemical and mechanic-

al treatment; boiling processes; breaking and beating engines. Bleaching processes, antichlors, nature and application of loading agents; determination of ash. Sizing and sizing materials, determination of the presence or absence of the various sizing agents in the finished product; effect of acid on the pulp and means of detection; toning, coloring and mottling, mordants and coloring matters used in dyeing and staining, nature of coloring matters, application, fastness to light, chemical reactions for detecting coloring matters in finished paper; hand process, paper machines and the appliances connected with them; calendering and cutting, various classes of paper, paper testing, utilization of waste products, soda recovery; processes for the preparation of wood pulp.

With the little machine we made paper out of different fibres to note the characteristics of the paper made out of each. Then, paper made out of fibres mixed in different proportions. The students were requested to keep samples and records of these experiments, in a scrap book supplied to that effect.

One interesting experiment I remember, was when Mr. Hübner brought us some wood stalks, coming from South America and submitted to him by a local firm for investigation as to its value and paper making material. The amount of cellulose yielded after the boiling process; the work in the bleaching and beating operations were carefully recorded; the tearing and breaking strain noted, and some paper was made out of the pulp obtained; on the experimental paper-machine.

Mr. Hübner remarked after this experiment, that mostly all fibres suitable for paper making had already been experimented as to their value by Piette, a paper maker of Luxemburg, who existed in the last century and who gives in a book a complete account, and samples of all the sorts of paper obtained out of every thinkable material. The discoveries he remarked which are made every few months and given publicity in the newspapers, have been long ago experimented and are fully reported in this old book which is now very hard to get and worth a high price.

When at one of the last meetings of the Technical Section, I saw some blotting paper made on the experimental machine of the Forest products laboratory, it reminded me of another experiment made by us, when students at Manchester, at the suggestion of Mr. Hübner. The Professor pretended that the blotting paper would have a far better absorbing power if the fibres could be split and broken. He imagined for this purpose to soak the sulphite pulp in a concentrated solution of a salt. His theory was that this solution would be introduced into the canal of each fibre as they are hollow, and that when the crystals would be formed the expansion of the salt would break the walls of the fibres and give them a better absorbing power.

A similar investigation was made by simply soaking the fibres in water and freezing the fibres by artificial cold; the expansion due to the formation of ice would also break the walls, and give the same result as in the above case.

Twice a week, we used to have some microscope work. Mr. Hübner's assistant was submitting us some mixtures of fibres asking the students to find out the nature of the fibres, and the percentage of each kind present.

Concerning the school in general, I may say that it is the centre of technical education in Manchester and in the Lancashire. From the technical school, lectures are sent to a number of small schools in the suburbs. Manchester is a radius of thirty miles; forms the densest populated district in the world; an essentially industrial district. The thousand of day and evening students which have come out of the school of Technology have surely had their usefulness in the industries of this very important industrial district of Great Britain. With the exception of the weather and the fogs which in this month of November are specially thick and frequent, I must say that I have kept a most pleasant souvenir of the two years which I have spent in England, as a student of the Municipal School of Technology of Manchester.

L'UNION DES FABRICANTS DE PAPIER DE FRANCE

In the summer of 1914, I was present at the Annual Meeting of the Association of Paper Makers of France—"L'Union des Fabricants de Papier de France"—This important Institution was celebrating in 1914, the fiftieth Anniversary of its foundation. Introduced by Mr. de Montgolfier, the head of the well known French firm of that name, I was invited to attend the sittings of the Association. They took place at the Cercle de la Librairie, Boulevard Saint-Germain.

This is a building for their Association, as well as for the Associations of the allied Trades. In this building are the head quarters of the printers, lithographers, stationery dealers. They are all grouped. They have in different parts of the building, their different offices. The official organ of the paper makers, have also its offices in the building. It seems a good idea that all these organizations which have so many identical interests, should have that link which helps to join them all together; which give them opportunities to meet more often and discuss whatever matters invariably arouse out of their necessary relations. They are in fact sister Associations. There is a common large meeting hall at the disposal of all these Associations. The paper makers meeting was held there.

It is interesting when we form part of an Association like ours in Canada, to see how the business is conducted in a similar Association of another country, and to hear discussions of their interests. Their aims are the same as ours; the desire of promoting the interest of the paper trade. The means only differ. Like in our meetings, I heard the Chairman of the different sections giving lectures of the resolutions adopted by the various committees, and the whole assembly discussing these resolutions.

One of the discussions which took place at this meeting where I was present, would strike now, as being rather strange. I was concerning the over production of the paper mills in France. In 1914, the production was exceeding the demand and there was accordingly a tendency for the prices to fall. It does sound strange to Technical men who have to face in Canada the opposite problem; this is the necessity of producing more to meet the demand, and where on account of the present economic conditions, the prices of pulp and paper seem to have no tendency to fall. To hear an echo of that discussion which illustrates all the difference between the past and present conditions of the trade. Here is the remedy which has been proposed by the investigat-

ing committee and which was submitted for general discussion. They would establish for every mill an average production based on reports of the production of the last years, and each firm would be obliged to keep to this average production. They proposed inflicting a fine for every hundred kilos produced over the established average, and an allocation would be granted, for every hundred kilos, minus the established average production.

At the same sitting the committee of the Technical education mentioned the progress of the Grenoble school, and there was a lengthy discussion about a pension fund for the employees who work a certain number of years in a paper mill.

A member of the French Parliament, Mr. Failliot, a paper maker who seemed quite an authority in the various discussions, and Mr. Chauvin the Chairman of the Association, to whom I was introduced, afterwards, earnestly inquired about the forests, the pulp and paper mills of Canada. They remembered the exhibits of the Canadian Industry at the World's Exhibition of Paris in 1900. They told me their belief that Canada would become one of the leading nations in the pulp and paper industry, on account of its rich natural resources.

LE MONITEUR DE LA PAPETERIE FRANÇAISE

I paid a visit to the officers of the official organ of the paper makers Association "Le Moniteur de la Papeterie Française". They are located in the same building, 117 Boulevard Saint-Germain. This magazine was founded the 15th of October 1864. Its life has been intimately connected with that of the paper makers Association. It has now an existence of fifty years. It was born the same year as the paper-makers association, and has always co-operated with this association. It has been a means of giving publicity to the reports of their meetings, amongst all the paper makers of France.

Ever since I was a boy I remember seeing this periodical in our office at St. Jerome. The blueish color of its cover, somewhat similar to the sky blue color of the French soldiers uniform, was familiar to my eyes.

Mr. Lemoyne and Mr. Radideau, which are respectively editor and writer of the paper and whom I had met in previous occasions discussed the situation of the paper industry in France. They told how they were interested in our Canadian affairs, they said that every time they had news from Canada they always inserted same in their journal. I had brought a number of the Pulp and Paper Magazine which they thought a progressive publication for a country of seven million inhabitants. Their compliments may be accepted by the former and present editors, who have their share of merit in its prosperity.

Mr. Kaindler who was formerly the editor of this French Magazine, was, they told me, keenly interested in the development of the pulp industry in Canada, so much so, that he attempted to interest some capitalists of France in the formation of the "Franco Canadian Pulp Company", a mechanical pulp mill to be established either in Chatham or Mispic, about five miles north of Chatham, in New Brunswick. He had even made a trip in America for making estimates and making the choice of a suitable site. Unfortunately he died not very long ago, unable to realize his plans.

I must not omit that this paper, in order to vulgar-

ize the science and give a chance to workmen who have not much means, to read some literature appropriate to their work, have special rates for Foremen and all the employees of paper mills who care to receive the paper, they allow them a rebate in the subscription price.

The magazine has now ceased its publication since the beginning of the war, and, from the last issue which has been published, I extract and translate the following words: — "The afflicting events begun in August 1914, have obliged us to interrupt the publication of our magazine during the conflict, as our staff and the printers staff, have almost all left for the Army. When our country will have seen the triumph of the sacred cause of its independence, we shall continue the regular publication which had been interrupted only in 1870, and is now again in 1914, suspended for the second time."

THE DE MONTGOLFIER LUQUET & CO. — ANNONAY.

It is very hard to get into a paper mill in France, and you may consider it as an exceptional favor to be allowed to study their methods. An old friendship with the de Montgolfier family, the well known paper makers of Annonay, gave me that privilege. Some five years ago, the young Jacques de Montgolfier came to Canada to make a stay with us, in our St. Jerome mill, and I was offered the same favor at the de Montgolfier mills in France, in 1914. Consequently I went to Annonay in the Department of Ardèche, south of Paris, not far from Lyon.

A strange looking little town of about seventeen thousand people. I first noticed a monument of the Brothers de Montgolfier, the inventors of the balloon, who were also paper makers. This monument is situated in the centre of the City, in the principal Square.

Along the little River of Annonay are the de Montgolfier Manufacturers, there being five mills. These are old mills with stone walls, which have stood for hundreds of years and seem to be good for quite a few more centuries.

The five mills I have visited are those of Faya, Grosberty, owned by de Montgolfier & Co. The mills of Moulin du Roi, Usines Saint-Marcel and Vincent de Montgolfier. All except the last are old paper mills, making all fine paper. The last named is a new mill making book paper, out of chemical pulp.

All these mills are conservative in their methods, and there are quite a few families where the sons have succeeded to the father in the employment.

I do not like to give away what was intended to be confidential, but I feel I can describe in a general way the method of manufacture, which is not only particular of their mills, but is typical of the conservative European processes.

First. The boiled stuff is washed in washers, provided with rollers fitted with propellers and a washing drum.

Second. The rags are taken out of this engine above mentioned by means of special forks made for the purpose, and are thrown into another engine where they are disintegrated and washed. This second washing is performed by the throwing of the half stuff on a metallic screen after it has passed under the disintegrating roll.

Third. The disintegrated half stuff is transferred into drainers.

Fourth. The stuff is conducted to a bleaching engine fitted with a screw propeller to accelerate the motion.

Fifth. The half stuff is again put into drainers.

Sixth. It is given another wash, so as to have every trace of chlorine disappear.

Seventh. Again sent to drainers.

Eighth. The so prepared stuff is then taken to the beating engines.

These methods are different from the American methods, but are giving them satisfaction.

The industries of the de Montgolfier's are now unfortunately all disorganized; all the able men having rushed to the defence of France. I may say that the eldest son of Mr. de Montgolfier, Capt. Marcel de Montgolfier was killed at Dixmude in the month of November 1914.

Allow me incidentally to take the liberty of quoting a few of the eloquent words addressed by the old white haired father Mr. de Montgolfier, in answer to a letter of sympathy written on the occasion of the bereavement I have referred to: This war, says Mr. de Montgolfier will leave in my heart a bleeding wound, but the death of my son who fell facing the enemy, proves me the unshrinkable determination of our brave French soldiers to defend our dear France. The enemy will learn that France which they considered as degenerated, has not forgotten its traditions of honor. We have faith in the final success, and we have faith in our valiant allies. These words although personal, will tend to demonstrate that above all sacrifices of industrial disorganization; even above the supreme sacrifice of death, they place their strong and devoted patriotism.

ECOLE FRANÇAISE DE PAPETERIE DE GRENOBLE.

The school of Grenoble as that of Manchester, is part of a University; it is a section of the University of Grenoble. While in the case of the Technical school of Manchester, this Institution has been founded by the town, paid by the town and is really a municipal organization; in the case of Grenoble, the formation of the school has been promoted by the Association of paper makers of France; encouraged by the French Government who gave subsidies, encouraged by the town of Grenoble and by its Chamber of Commerce.

If we divide in three classes the degrees of Technical education the primary, the medium and the high Technical education, I would rank in the last category, the teaching of Grenoble; as I would class in the medium, say for instance, the teaching which is given, at the Technical school of Montreal, on Sherbrooke Street. The course given at Grenoble is a real course of Engineers, to which is added some lectures and laboratory work in paper making; and their graduates are entitled to the diploma of paper makers' engineers. It probably corresponds to the "Technischen Hochschule" of Germany.

It has been said that in Germany, the success of the Industries have come from the higher Technical education while in England it has come from workmen of initiative, who have joined to their work, the fruitful complement of Technical education. No matter what are the methods (they might be infinitely discussed) the important point, is that they are, well adapted to a country's needs, and successful.

At the Grenoble school the student must have a good

scientific training to begin the course which is of two years. After the course it is advised that the graduates make a stage in a paper mill to complete their practical knowledge. The general scientific training is given by the Professors of the University. Professor Favier gives the lectures in practical paper making. In the first year of the course the following are taught:

FIRST YEAR.

General Chemistry.
General Physics.
Electricity.
Mechanical Drawing.
Advanced Mathematics.

SECOND YEAR.

Lectures on Paper Making.
Chemistry, applied to Paper Making.
Industrial Mechanics.
Electricity.
Industrial Construction.
Electro-Chemistry.
Electro-Metallurgy.
Hydraulics.
Industrial and Commercial Law.
Finances.
Accident Prevention.
Industrial Drawing and Designing.
Laboratory Work: Making of paper; testing of paper and industrial chemistry.

The laboratory of practical paper making; the testing department and the machinery, occupy a special building, which I have visited with Professor Favier. I was told by Mr. Favier that the constructors of France had also encouraged this establishment in selling at cost price the machinery. One notes that the generosity has been quite divided among the benefactors, as the paper making machine for instance, has been furnished by three different firms, the fourdrinier by a firm, the presses by another, and the dryers still by another. This machine measures 20 meters in length and 550 millimeters in width. There are three engines: washing, bleaching and beating engines. A motor of 30 H.P. drives this miniature plant.

The school does some investigating work for the trade, not probably to a great extent but I note in the magazine the following advertisement:

SCHOOL OF PAPER MAKING OF GRENOBLE.

ANALYSIS AND INVESTIGATIONS.

Determination of moisture in pulp.
Analysis of raw material used in paper making, chemicals, etc.

Investigation of fibres as possible paper making materials.

- a. Chemical treatment for isolation of cellulose.
- b. Micrographic characteristics.
- c. Yield of cellulose.

For information and prices see the director of the school of Grenoble.

I suppose this is meant to stimulate the students' work.

I had a good idea of what a graduate of the Grenoble school could do, when I visited the Leipzig Exhibition in the pavillion of France, at the section of the school. I saw a plant of paper mill designated by a student, Mr. René. Failliot. Drawing, plants, estimates, all were there to show what was supposed to be the knowledge of a graduate of the paper making school of Grenoble.

MESSRS. E. & M. LAMORT.

I visited the firm of Messrs. E. & M. Lamort Fils, Engineers and specialized in the construction of a patent screen of their invention. This firm is situated in Vitry-le-François, is owned and managed by two bright progressive young men. They are the sons of a paper maker of Luxemburg.

Instead of following in the footsteps of their father, in the paper making industry, they preferred organizing a firm of their own of Mechanical Construction, with a little capital which has rapidly grown up. One of the partners Marcel, is the inventor and Technical man; the other is the office and finance man.

The first thing they showed me, was the small miniature model of the screen invented. They told me the origin of their idea was to get a screen with both a rotary and vibratory motion. They recalled the inventor's anxious thoughts and finally their mutual joy, when Marcel holding the miniature machine, which had served for his experiment, exclaimed "It's going, I have got it going."

I may in a few words describe this device, which is very simple. It is composed of a phosphorus bronze cylinder perforated. The stuff comes in by one of the ends and as the drum revolves and vibrates, the stuff passes through the slots and falls in the vat. The journals of the cylinder rest at both ends on leather straps, one extremity of the strap is fixed and the other is attached to the eccentric rod. Every motion of the rod will lift the cylinder and it falls having done a fraction of a turn. The rapid succession of the motion will produce a rotary and vibratory motion.

The machine was first tried in a Mill in France, and adopted by several others. The device doing away with gears and endless screws mechanism of other rotary screens and having the advantage of being noiseless and simple, became rapidly popular.

The young Lamorts had the satisfaction of seeing their patent adopted even in Germany, when Fullner arranged to construct the machine for that country. They were grateful to our firm, as we were the first to try the screen in America. It has since been made and sold in United States by the Black-Clawson Co. of Hamilton, Ohio.

They also showed me a collection of papers from all the paper making firms using their screen. I examined with interest and saw the samples of almost all the sorts of papers, made nowadays. I then left Vitry-le-François for Germany.

The last news I received from these interesting friends, informed me that they had been suffering slight damages during the short occupation by the Germans on their town in 1914. They told me that they would send me a souvenir of some projectiles found in their shops. Vitry has been the scene of the glorious battle of La Marne. The shop of the Lamorts are now engaged in the manufacture of munitions.

ZUM BRUDERHAUS.

I left Vitry-le-François for Germany. I had made arrangements for a stay of about a week with the Zum Bruderhaus Papier Fabrik of Dettingen, in the Wurtemberg.

I passed through the Alsace-Lorraine, crossed the border lines of Avricourt, passed Strassbourg and got to Stuttgart.

Dettingen is only a few kilometers south of Stuttgart. This small village with a few hundred inhabitants, no accommodations, no hotels, is no place for tourists. In fact while I was at the mill I had to get a lodging in Urach, a little town about three miles from Dettingen.

The paper made at "Zum Bruderhaus Papier Fabrik", is a fine paper, different in appearance from the good paper made in America. It is generally of an ivory white tint; a writing paper which has not the nerve of the American bond, but which is suited to their taste, and intended to please the customers of their country.

I have quite an accumulation of notes, taken while there, but I intend to observe the same discretion towards them, as towards by friends in France. Here again though, I may be allowed to give a general idea of the processes followed, in treatment of the raw material; of these processes which Hoffman relates in his well known books. It is somewhat similar to those followed at the Annonay Mills.

The rags are first sorted in the mill as they are almost always bought without being sorted. The Company finds its profit in doing so, on account of the difference in price with the stuff already sorted, and on account of the very small salaries paid to the laborers, that of the women especially.

The rags are all hand cut. The boiled rags are washed first in the boiler itself and afterwards brought to washing engines, then are transferred to another engine to be disintegrated. From that engine they fall in a centrifugal rotative chest, which expulses the water. The pulp comes out of that chest in a half stuff form. This half stuff is then brought up to bleaching engines. The engines for these different operations are small and contain about 70 kilos of stuff. Then the bleached stuff passes between the rolls of a presse-pâte, and falls in various drainers for a certain period, from where it is taken according to the wants.

The machinery used is nearly all supplied by the "Zum Bruderhaus maschinen fabrik" of Reutlingen; a firm of Mechanical construction for the paper industry; and affiliated with the paper mill.

They have a big curious old water wheel of about forty feet in diameter and over fifty years old. The water comes from the top and is lodged in the compartments of the wheel, which makes it turn by its weight. It is kept mostly as a souvenir. For their main power, they have a modern electrical station, situated about one kilometer from the mill, where they have turbines and generators. All new machinery from Voith of Heideheim.

Mr. Seuter, the director, has his residence, office and laboratory all in one house, a few hundred feet from the mill.

Dettingen is a hilly country and reminded me of the Laurentians. When Mr. Seuter told me that the salary of the laborers was only a few marks a day, I wondered what sort of a poor life they could lead. I observed the workers at the mill, and passing along their habitations, I tried to form at a glance, an idea of their mode of living; and left with an impression of sadness, although I was told that they were satisfied with their lot.

THE LEIPZIG EXHIBITION.

From Dettingen I went direct to Leipzig, as I did not want to miss the opportunity of visiting the Exhibition of the book and graphic arts. I would never have imagined such a complete affair. I thought of one building for the exhibition, but I found instead, a village of large buildings, as in the case of a general International Exhibition. All the countries of Europe had erected special buildings, viz:—France, England, Russia, Italy, Japan and Austria, each had contributed in a building, made in the special architecture of their own country. The past and the present of the book; paper, printing; and all what is in one way or the other affiliated to these Industries, was represented.

The books, the graphic arts, have been in the centuries past and are yet, the vehicle for the diffusion of men's thoughts; science; literature. It is by its means that instruction has reached all social classes of the world; and this exhibition was a tribute to its influence, in the welfare of the nations.

The complete history of these industries going far back in the prehistoric ages, and their evolution, may be considered as forming the first part of the exhibition; and the modern conditions as shown by exhibits of the largest machinery and samples of paper made nowadays in Europe, may be considered as forming the second part.

You would meet there on one hand, some students of Antiquity; and, on the other hand, some representatives of important firms; printers, box makers, lithographers and business men, from all parts of Europe, coming to the Leipzig "Ausstellung" to buy the latest machinery for their business.

Stones engraved with inscriptions seem one of the first steps in the graphic art.

You can see a whole "Smala", supposed to be American types of men, women and children of natural size and you would think they were living creatures, as they are so well imitated. They wear some Indian clothes and on their habitation, there are lots of typical inscriptions. Nothing artistic about these inscriptions, but they were the graphic illustration of some human being thoughts, and consequently, form part of that history of graphic arts.

Also of natural size you see a Polynesian being tattooed by a fellow countrymen; he had probably all the history of his family tattooed on his skin.

Then you see some wax tablets used by the Romans. By means of a stylus, they engraved characters and sent these tablets as we send a letter now, for social or business correspondence.

Then comes the parchment. You see some beautiful books made of whitened and polished skins of animals, some books, all hand written, and shown open, and we notice the artistical decorations, gold and colored initials, etc.

Then the appearance of papyrus. Here were some rolls, and instead of turning the leaves to read as we do for a book, you read by keeping unrolling this roll.

We note the Chinese section which has its historic importance, as China was the cradle of the arts of writing, printing and paper making.

Two mills in full operation are part of this large exhibition. The first mill is an illustration of the old hand made process. It is the reproduction of a mill which was situated in Hainsburg. The outside archi-

ecture is attractive by its characters of antiquity. Nothing is forgotten, we remark outside the building, the canal; the little water wheel and the small bridge. Inside you meet the leafening noise of big mallets hammering the stuff to a half stuff. Clever workmen are busy forming hand made sheets in moulds. The sheets are afterwards pressed and dried and then are printed by means of an old Gutenberg press, a hand press naturally; and ancient characters are used. These hand sheets so printed, are sold as souvenirs for a few "pfennigs".

Next to that noisy, wet, dark, but nevertheless interesting old institution is a modern institution. Centuries of inventive genius stand between the two. Here a modern mill well lighted, clean and a Fullner machine of the latest type with copper ends of rolls shining. Hollanders with stuff rapidly moving, all this mill actually working, making out of chemical pulp, a rapid continuous sheet of paper. The paper made was printed in the next hall in a rapid rotary press of August Scherl of Berlin.

In another building, I noticed an exhibit of the Royal Bureau of analysis, with all sorts of testing apparatus. Farther, are some rare editions, manuscripts of well known authors, the first editions of well known books which are supposed to be worth an enormous price. Some oriental editions with hand made illustrations were lent by the Sultan of Turkey; other rare editions taken from collections of Kings were shown.

Going along the other buildings I noticed the history of journalism, the first, are small manuscripts of modest appearance. It was the beginning of newspapers, without which we could not do now. The first years, they were printed on very small sized sheets, and you follow then progressing. The oldest papers are brownish having been burnt by the time. There was even a collection of scandalous literature, where naturally I did not stop long.

Photography which plays a part in the illustration of our reviews and weeklies, had displays of lenses, plates, printing paper, developing powder, and an apparatus for photographing at a distance. And the cinematograph which is also a means of transmitting men's thoughts, had a building of its own.

Different systems of stenography are shown. Writing machines of every make and description; and finally in the "Kaufman" House, you find all what is necessary for the equipment of a modern office; writing desks, card system, index, etc. are exposed.

There are exhibited a variety of aniline colors, so difficult to get now; you will find them all there, well exposed in attractive big glass bottles. The big firm of Aniline Color makers are all there represented; they are anxious to get your orders.

In one of the three machinery halls, measuring about 300 feet in length, there was a huge calender and in order to get an easy access to all the rolls, and even the higher rolls, there was an electrical lift connected to the calender. I had the curiosity of going up in this lift at the top of the calender, so as to have from this elevated, point, dominating in height all the machines, a general view of the hall.

As the visitor leaves these premises he has a broader conception of the meaning of the words "Graphic Arts", and he realizes that our industries and their ramifications have had their large share of merit in the progress of civilization.

This last visit to Leipzig was made in the latter part of July 1914. I was in Berlin on the 31st of July, and when I made my way out of that country on the 1st of August, Germany was in state of war. I took my train, passing through the station guarded by German soldiers, with fixed bayonets.

These are gentlemen, the visits I intended to relate to the Technical Section at this meeting. European Institutions are fascinating to visit; centuries past, have marked their development.

But our firm belief, our strong faith are, that the most brilliant future will be the lot of our Canadian Institutions, in the course of this 20th century.

MR. THOMPSON JOINS PULP AND PAPER.

Mr. Harold W. Thompson, who has just joined the Pulp and Paper Magazine as its Ontario Representative, with headquarters in Toronto, is a native of the "Ancient Colony." He was born in Newfoundland some thirty odd years ago, his father being formerly a well known journalist and member of Parliament, and now the occupant of a seat on the Bench.

Mr. Thompson obtained a thorough journalistic training under his father, and then launched out on his own "hook" and knows all about the troubles and



tribulations of the man who tries to be editor, advertising manager, office boy and printer's devil at one and the same time. After a number of years experience in Newfoundland, he came to Canada, where he was engaged in both editorial and reportorial work. Eight years ago he joined the Hugh C. MacLean company, and by hard work and a thorough knowledge of his business, obtained a very large measure of success.

The Pulp and Paper Magazine of Canada welcomes Mr. Thompson to its organization, and feels confident that he will soon number among his friends a large clientele of advertisers.

PLANTING CUT-OVER LIMITS.

A recent bulletin of the Commission of Conservation has the following: "The Riordon Pulp & Paper Company is making plans for forest planting on cut-over portions of its timber limits in the province of Quebec. During 1917 about 400,000 seedlings of forest species will be planted. A forest nursery is also to be developed, the capacity of which will be 1,000,000 small trees each year for planting on the holdings of the company. A. C. Volkmar is the forester in charge of this work, with headquarters at St. Jovite, Quebec. In addition to the nursery and planting work, information is being collected systematically with regard to the amount of growth which is taking place on the company's property. It is obvious that this information is very important in connection with the preparation of plans for the permanent handling of a large area of forest land, on the basis of perpetual operation. The investment involved in the erection of a pulp and paper mill is so great that a company of this kind must look far into the future, in figuring on its sources of timber supplies.

The Laurentide Pulp & Paper Company and the Pejepscot Paper Company have already made considerable progress on forest planting on their lands in Quebec with a view to the future production of timber for the manufacture of pulp and paper. The Laurentide company is the pioneer in this direction, its forestry work having for years been managed by Ellwood Wilson. The forestry and planting work for the Pejepscot company is being directed by J. E. Rothery.

RIORDON COMPANY PURCHASES TICONDEROGA

The Riordon Pulp & Paper Company, Limited, has purchased a majority of the capital stock of the Ticonderoga Pulp & Paper Company, Ticonderoga, N. Y., which has been a buyer of one of the Riordon Company's principal products. Mr. Charles Riordon becomes president of the Ticonderoga Company, with a new board of directors, composed largely of Riordon interests. An official announcement of the transaction, stated:

"The Ticonderoga Pulp & Paper Company manufactures over one hundred tons of soda pulp and fine book and specialty papers per day. They are one of the many large consumers of Riordon high-grade, easy-bleaching sulphite fibre.

"The Ticonderoga Company is old-established and one of the most favorably known concerns in the paper trade. It has a well-equipped plant, and manufactures the highest grades of their class of papers on the market. This connection insures to the Riordon Company a permanent outlet to the ultimate consumer—the printer—for a considerable portion of its product.

"Fixed assets of the Ticonderoga Company are about \$1,700,000, and the surplus of current assets over current liabilities is over \$650,000. The earnings which accrue to the Riordon Company from this investment will mean very substantial profits to its shareholders."

Directors of the Ticonderoga Pulp & Paper Company are now: Charles Riordon, Carl Riordon, F. B. Whittet, Lawrence Macfarlane and T. J. Stevenson, of Montreal; George E. Challes, Toronto; T. E. Warren, Ticonderoga, N. Y.; C. S. Merrill, Albany, N. Y., and Allen Curtis, New York City. The new officers of the company are as follows: Charles Riordon, president; Carl Riordon, vice-president; F. B. Whittet, secretary and treasurer; T. E. Warren.

INTERNATIONAL SETS PRICE AT \$62.

The International Paper Co. has set the price of news-print for 1917 at not less than .0310 cents a pound, or \$62 a ton, at the mill. Publishers are to pay freight, cartage, insurance, and storage charges. The paper is to be sold in twelve equal monthly instalments; newspapers to accumulate their own surplus from the allotment they obtain from this corporation.

The announcement of the price was a surprise to publishers, who had expected that the quotation for the coming year would be less than 3 cents a pound. It is expected that other companies will fix their prices at or about the same figure. Philip T. Dodge, president of the International Paper Company, states that the advance of more than 50 per cent. is necessitated by the increased price of everything that enters into the manufacture of news-print.

"The price," said Mr. Dodge, "is based on the increased cost of manufacture, due to the advancing cost of everything that enters into the making of paper."

"How are publishers to meet an increase of more than 50 per cent., Mr. Dodge?"

NORTH AMERICAN PAPER.

North American Pulp and Paper Co. has made a proposition to several New York newspapers for establishment of a mill at tidewater, with a capacity of 500 tons daily. The plant is to be erected and in operation by January 1, 1918, provided newspapers agree to assume sufficient tonnage for a sufficient length of time to justify construction.



Centre figure is Corp. J. J. Kelly, 60th Batt., C.E.F., formerly with Howard Smith Paper Co. He recently won the D.C.M. for conspicuous bravery.

Digest of the Paper, Chemical and Mechanical Pulp Markets of the World.

(By the News-print Manufacturers' Association).

NEW YORK, November 28th.

There is practically no change to report in the pulp and paper markets in the world. Stocks are still low, but there is very little offering, and prices are nominal ones, except in England, where a slight easing off in prices is reported.

The trade papers have taken quite an interest in the production of pulp and paper in countries heretofore little exploited for the manufacture. Investigations and timber explanations have been made in Argentina, Uruguay, Brazil, Tasmania, Philippines, Egypt, India, etc., and new paper-making woods have been found, applicable principally, however, to other grades than news-print.

In India, there are seven mills, operating sixteen machines and producing some thirty-five thousand tons yearly against the country's requirements of 112,000 tons. The principal raw materials are Sabai grass, wood pulp, which is imported to the extent of about 14,000 tons yearly, rags, and bamboo. England, Norway and Sweden have been the principal exporters, but Japan is making an effort to obtain the market.

Argentina has heavily protected with tariff the grades of paper that can be manufactured in the country, and the imports of wood pulp have increased to over 25,000 tons annually. Scandinavia lost the hold she had obtained here and in Brazil during the past few years, due to transportation difficulties, and most of the pulp is being brought in from the United States and Canada. White wrapping and inferior qualities of book paper constitute most of the paper output.

Spain.

There is nothing new in the Spanish market, as conditions have become very nearly normal, due to the government purchase of paper supplies for the press of the country.

Italy.

Italy, according to the "World's Paper Trade Review" has gone a step further than the appointment of an Industrial Commission to regulate the paper industry during the present shortage of materials. The Minister of Agriculture lately appointed a Commission to inquire into the best means of developing the production of wood pulp in the country, and it is quite possible that a very large government paper mill will be built.

Italian imports of chemical pulp dropped off from 95,000 tons in 1913 to 65,000 tons in 1915, largely due to the cutting off of supplies from Germany and Austria. Scandinavian countries are making a great effort to establish themselves in Italy, and are meeting with success, as credits have been satisfactorily arranged.

The price of news-print paper for the three months ending with October was \$148.82 per ton but the price for subsequent deliveries has not yet come to hand.

France.

According to the "World's Paper Trade Review", London, England, the French newspapers have agreed to reduce by one half the size of their pages and also

on two days of each week to cut the journals down to two pages each. This move was found necessary because of the difficulty of obtaining labor, pulp, waste paper, and wire cloth, and it is estimated that the arrangement will represent a saving to the papers of over \$190,000.00 a month. France's requirements under normal conditions are about 260,000 tons of mechanical and 200,000 tons of chemical pulp, a part of which before the war came from Germany and Austria.

Japan.

"Svensk Pappers Tidning" Stockholm, Sweden, takes close account of the progress of Japan in the paper industry, and in its reproduction of the report of the (Swedish) Envoy in Tokio to the Foreign office it states that so far as he knows all the Japanese paper mills have been enlarged or are about to extend to take care of the future.

Below is a tabulation of the location, owners, and output of the wood pulp mills in Japan:

Now existing:

(Tomakomae Hokaido) Oji Paper Mfg. Co.....	15,000 tons
(Odomari Sakhalien) Oji Paper Mfg. Co.	7,000 tons
(Tomarioro) Karafuto Industrial Co...	7,000 tons
(Tomarioro Sakhalien) Karafuto Industrial Co., increase	10,000 tons

In construction:

(Ochialilen) Chemical Pulp Co. of Japan	10,000 tons
(Nairolien) Fuji Paper Mfg. Co.....	10,000 tons
(Toyoharalien) Oji Paper Mfg. Co.	?

Germany and Hungary.

"L'Industria Della Carta" Milan, Italy, for September, states that in Hungary the lack of news-print paper has provoked an ordinance that limits the \$.023 newspapers to eight pages, the \$.011 papers to four pages, and the papers of less price to two pages.

This paper also states that the "Frankfurter Zeitung" publishes an Imperial Edict to the effect that newspaper editors in Germany are limited to one-half their present supply of news-print paper.

Russia.

In looking abroad for probable extension of the pulp and paper business, "The World's Paper Trade Review" London, England, has recently published a number of articles on Russian timber lands. Timber, the "Review" advises, is one of the principal Russian exports to the United Kingdom, England taking 70 per cent of her requirements of raw material and semi-manufactured timber, pulp, etc., from this source. Russia's European forests' area is estimated at 464,500,000 acres, and her Asiatic areas at 385,000,000 acres. With the constant increase in demand and enormous drain on the forests, Russia should be the natural future source of supply.

Markets and general conditions in the pulp and paper trade on the other side are so quiet at present that the trade papers have had nothing to add to their recent articles quoted in our digest.

England.

According to the "World's Paper Trade Review" the news-print paper market during October was dependent entirely on existing stocks, as the merchants were offering paper at a lower price than the mills were asking. The demand slackened off to a large degree and the middle-men, having stocked on favorable terms, were in a position to shade prices. The decrease in demand and also the hope that an amicable arrangement would be made between the Governments of England and Sweden were forerunners of a general slackening in the prices of most grades of paper and pulp. M. G. Sulphite papers of various weights, cap and envelope, ochre glazed and nature brown, leather boards, easy bleaching sulphite and soda pulps, mechanical, especially moist, and news, all showed an easier tendency. The export trade also lost a great deal of its briskness. Toward the middle and end of October the standard pulps and news-print strengthened in spite of the dullness and lack of trading, and it is believed that when buyers come on the market again they will find makers' prices very stiff, especially with paper import licenses officially reduced by one-half instead of one-third.

The Swedish wood pulp makers are standing firmly with the government in its attitude toward the embargo on wood pulp exports to England. They deeply deplore a severance of the established connections with their English customers, but feel strongly that the British Government should be willing to grant a compensation for the export of Swedish wood pulp, as the other combatting nations have done. While pulp from United States and Canada is being obtained in England at a lower price than the Norwegians are willing to make, the quantity is small and has not so far softened Norway's price, so it appears as though an amicable agreement between England and Sweden can be reached only through an alteration of the former's policy in regard to her export of coal.

Sweden.

According to "Svensk Pappers Tidning" Stockholm, Sweden, the United Paper Mill at their annual meeting at Copenhagen declared a dividend of 16 p.c. reported on the prospects of future profits as follows:

"It is difficult to express any opinion in this respect as the question is very much dependent on the continuance of the war, and other conditions about which it is impossible at this time to give any opinion. The Board thinks that the good results of the past year do not justify the supposition that this will be the case during the following year, as after the end of the war a considerable fall in paper prices can be expected. The Board believes also that the increased demand for paper which has prevailed has not been caused by increased consumption, but that the paper dealers and consumers have desired to increase their supplies on account of rising paper prices."

The opinion that another large profit is not assured for next year is probably based more on the possibility of a curtailment of production than a falling off of demand and prices. It is now announced that export licenses for Norwegian pyrites will not be given for more than 40 per cent of the customary annual supply and in addition to this the price for the Norwegian product has increased so much that it is hardly cheaper for the Swedish mills to buy than pure sulphur from North America. Chemical pulp prices in Sweden

are very strong as a consequence, "Affarsvarlden" Stockholm, Sweden quoting sulphite from \$87.53 to \$97.25 and sulphate \$102.11 to \$104.54 per short ton f.o.b. net cash against documents. The United States market is still attracting Swedish sulphite, and during the second week in October 6,000 to 7,000 tons were sold to American importers at \$89.95 to \$97.25 f.o.b. net cash. Sweden is offering very little mechanical pulp and prices are quoted at last month's level \$47.41 to \$48.62 per short ton f.o.b. net cash for dry and \$29.71 for wet. A large sale of dry mechanical is reported by the "World's Paper Trade Review" London, England, for delivery during 1917 at \$43.76 per short ton f.o.b., inclusive of ordinary agent's commission.

Norway.

According to "Tidsskrift for Papirindustri" Christiania, Norway, the effect of the stock held in England and the hopes of the raising of the Swedish Embargo has been felt in Norway, and pulp markets generally are weaker. The mills, however, have plenty of old orders to keep them busy, especially from the United States, and have not sold at the lower prices offered. The market for paper continues rather dull, but makers maintain their quotations, and as there as now several signs indicating a decided betterment, there are no prospects of prices being reduced. In fact, the general opinion is that in the course of a few weeks there will be a brisk demand for papers and pulp of all sorts. Dry mechanical is quoted at \$43.76 f.o.b., fifty per cent moist mechanical at \$24.31 to \$29.17, and again this paper and also "Farmand" Christiania, Norway, omit chemical pulp quotations, simply stating that the market is quiet and firm.

All of the Norwegian paper trade journals report at length on the labor situation, as it seems to be the principal worry of the industry. The whole shortage of labor according to the "Farmand" is caused by the failure of the population to increase in proportion with the growth of the industries. Farms are being more intensely worked, plants are being extended and new industries are coming into the country with the result that wages and the general scale of living of the laboring class have gone up enormously. The labor unions have been responsible for the cutting of the working time and have also systematically tried to keep labor production low. As a consequence, today this authority states, on the average the laborer in Norway does not produce more than 75 per cent of the work per day that he did a few years ago. The war has created such a demand for Norwegian products that manufacturers are overbidding each other for labor, and wages have followed the law of supply and demand. The pulp and paper industry has been a heavy sufferer and with this condition prevailing. Germany consuming everything that Sweden can supply, shipping facilities poor and rates high, and a constant increase in demand, the paper trade journals are very optimistic in regard to next year's prices.

NEW GERMAN PULP AND PAPER SYNDICATE.

It is announced from Dusseldorf, the London Times says, that a combine with a total capital of 1,000,000 marks has been formed for the purpose of syndicating the paper manufacturers of Western Germany. Preparations are being made for establishing additional cellulose mills.

PREDICT SHORTAGE OF NEWS FOR 1917.

New York, N. Y., November 27, 1916. — Local manufacturers of news print have found considerable interest in a report which has just been issued by the "Fourth Estate", a magazine published in the interests of the publishers. This report, which refers to the prospects of supply of news print for next year, is the result of an extensive investigation and is regarded by local newspaper men as being authentic. After stating that there is still cause for apprehension on the part of the consumers of news print regarding the prospects being able to secure enough paper for the coming year, the reports goes on:

"The American Newspaper Publishers Association has estimated that at least 660 additional tons of news print over the amount to be withdrawn from the market, must be provided by the first of 1918 to meet the demand there will be at that time. This is based on the 1916 increased rate of consumption over that of 1915.

"So far as the A. N. P. A. has been able to learn, about 900 tons daily (or 279,000 tons per year) will be withdrawn from the market within the next two years, in line with the plans of manufacturers to put more machines on other grades of paper.

"The Fourth Estate queried every manufacturer of news print in the United States and Canada on his plans for the future (which run only as far ahead as the beginning of 1918) and found that the entire increased daily output of news print they intended to make amounts only to 780 tons a day, or 241,00 tons a year, figuring 310 working days to the year.

"This shows a prospective shortage of 120 tons a day, or 37,200 tons a year, to be made up in the next year. This shortage somewhat exceeds that figured out by the A. N. P. A., which two months ago declared that it is expected that 1,000 additional tons a day would be on the market by 1918 to offset the 900 to be withdrawn. This would have given 100 tons daily extra, or 31,000 tons in the year and left 560 more tons daily (or 173,600 tons a year) to be provided to meet the estimated demand. The September statement of the A. N. P. A. regarding paper necessary for future consumption was as follows:

"During 1916 there will be produced on this continent approximately 1,900,000 tons of news print or about 150,000 tons in excess of 1915 production. This is at the rate of about 6,120 tons for each of the 310 working days. Machines producing now about 900 tons per day will not, it is believed, be producing news print two years from today, and the total increased tonnage in sight at the present time, much of which will not be available until 1918, amounts to but about 1,000 tons per day.

"Assuming these estimates to be correct, the production two years from now will be increased but 100 tons a day, or 31,000 tons, an increase of 16-10 per cent. for two years, or at the rate of 8-10 per cent. per year. It may be said in a general way that the normal increased demand for newsprint is 6 per cent. per annum, which would call for an increase of 234,840 tons to supply the 1918 market, while but 31,000 tons seem to be in sight. It is obvious that an increasingly serious situation awaits the consumer of news print unless new production in large volume be provided for without loss of time, and that not less than 660 tons per day additional must be brought on the market.

"These figures are, of course, at best only approximate, and are based on conditions some of which at the present time, it is impossible to more than roughly estimate. They are also based on the assumption that the present production equals demand, which is not the case. Therefore, assuming a six per cent. or normal increase of demand during the next two years, and bearing in mind the fact that additional machines now producing news print may be put on other grades, an increased production of not less than 660 tons per day would seem to be necessary to meet the probable 1918 demand.

"The investigation of the Fourth Estate shows that the A. N. P. A.' outlook for additional output is wrong by about 220 tons daily, or 68,200 tons yearly. If the A. N. P. A.'s figures of 900 tons of news print daily be taken from the market hold good, the prospects call for heroic work. The figures of the Fourth Estate positively cover all the additional news print manufacturers intend to turn out, for as far into the future as plans have actually been made. However, there are reports to the effect that the A. N. P. A. has several investors interested in financing the production of more news print in Canada and if they can be impressed with the necessity for quick action, the day may be saved.

"The first cheery work about news print, the publishers have heard in some time comes from G. F. Steel, secretary of the News-print Manufacturers' Association, that storage stocks have again begun to pick up after many months' draught."

It is well known that many of the news print manufacturers have been sorely tempted to change over onto such other grades as wrappings and fibres which are now being wildly sought at a good big premium. If, as it seems, that many of the news machines will commence to run on other grades after the first of the year, the country will find itself facing a very acute situation.

The promised 1916-17 increased output of news print assured to The Fourth Estate is as follows:

Abitibi Power & Paper Co., Montreal (later part of 1917)	160 tons
Brompton Pulp & Paper Co., East Angus, Que. (during 1917)	50 tons
Gould Paper Co., Doncona, Que. (just started)	50 tons
Great Northern Paper Co., New York (by March, 1917)	50 tons
International Paper Co. (at Otis Mill, Chisholm, Me., about Dec., 1916)	50 tons
Northwest Paper Co., Cloquet, Minn.	40 tons
Pacific Mills, Ocean Falls, B. C.	180 tons
Ontario Paper Co., Ltd., Thorold, Ont. (about February, 1917)	50 tons
Price Brothers, (Kenogami Mill, Jonquieres, Que. (April 1, 1917)	50 tons
Union Bag & Paper Co. (Cap. Magdeleine, Que., 50 tons by December 1, 1916, and 50 tons later in 1917)	100 tons

Totals. 780 tons

The Laurentide Company at Grand Mère, Que., has dropped its plans for enlarging the news print output until the machinery market is normal again, which, probably, will not be until after the European

war is over. The company intended to add 100 tons daily.

The figures gathered by "The Fourth Estate" are authoritative statements from the mill owners and show a 415-ton deficiency from the prospective outlook for 1195 tons, announced by the American Newspaper Publishers Association last September, as coming on the market before the close of 1917, and printed in The Fourth Estate" of September 16.

The A. N. P. A. also listed 80 more tons for March, 1918, from the Price Brother's Kenogami Mill, at Jonquières, Que., and 200 tons from the International Paper Company's mill at Three Rivers, Quebec, some time in 1918. But in statements to "The Fourth Estate" those companies said nothing about 1918 plans.

R. W. JOLLY.

CANADA'S PULP AND PAPER EXPORTS.

The extent of Canada's exports of pulp and printing paper is indicated by the official figures for the first five months of the present fiscal year, April to August inclusive which are now available at the Department of Trade and Commerce.

During that period, 4,212,119 cwt. of printing paper, valued at \$8,212,357, was exported. The principle importing countries were: United States, 3,853,379 cwt., value \$7,430,225; New Zealand, 121,346 cwt., value \$275,562; Australia, 113,981 cwt., value \$219,376; United Kingdom, 39,987 cwt., value \$100,259.

During the five months 1,971,572 cwt. of chemical pulp value at \$4,738,556 was sent out of the country. Out of this amount 1,609,954 cwt., valued at \$3,696,154 went to the United States, 305,461 cwt., valued at \$939,952, to the United Kingdom, and 51,117 cwt., valued at \$90,520, to Japan.

Ground pulp during the five month period totalled 2,480,642 cwt., valued at \$2,029,066, was exported—the United States, 192,188 cwt., valued at \$1,599,812, and Great Britain 255,814 cwt., valued at \$197,770.

Total exports of Canadian pulpwood and wood pulp for the three years preceding Marst 31st last have been as follows: 1914, 4,816,170 cords, valued at \$3,441,741; 1915, 6,163,703 cords, valued at \$4,459,539; 1916, 4,649,203 cords, valued at \$3,575,537.

For the same three years the value of paper of all kinds exported was as follows: 1914, \$577,422; 1915, \$839,334; 1916, \$1,352,518.

WHAT FOREST FIRES COST CANADA IN 1916.

Canada has lost through forest fires in 1916 fully seven to nine million dollars. This equals more than six times what has been spent on forest protection work from coast to coast.

The enormous sum wasted through this year's fires, most of which were preventible, would add another \$480 to the first year's pension allowances of nearly 19,000 Canadian soldiers.

It is noteworthy that while some parts of the Dominion owe to rainy weather their immunity from fire damage, the season's record proves beyond gainsay that in areas where first rate fire protection systems were in operation, losses of life and property were held down to a remarkable minimum.

UP AGAINST IT.

If the cost of paper continues to rise many newspaper men will be compelled to wear linen collars.—Ottawa Citizen.

CANADA TO BE WORLD'S CENTRE.

A despatch from New York says: Paper and pulp interests in Canada are well started on a campaign to make her after the war the chief sources of the world's paper and pulp supply.

The country has been slow to take advantage of its large pulp wood supply, and cheap and efficient water supply, with the result that it now finds itself many years behind the times in number of paper plants. However, in the last ten months the unusually large demand for newsprint has put new activity in the Canadian market, and new construction and additions are under way which will increase output by about 30 per cent.

By January 1, 1917, new machines put in operation will increase Canada's output by from 75 to 100 tons daily. Canadian production of news print is now a little less than one-half that of the United States, although it has an advantage in cost of manufacture of from 10 to 15 per cent. per ton, and a bulk of this production, or about one-fourth of the annual requirements of the United States, comes from Canada.

It is evidently the intention of Canadian paper and pulp makers to control the British market after the war, ousting both the German and Scandinavian interests, who have been foremost in British paper trade heretofore. German paper mills shipped thousands of tons of newsprint and other paper products to Britain before the war at prices well below the price of British mills, which was made possible by large combinations under government subsidy. This business between Germany and Great Britain after the war will not be renewed, and the large profits now being realized in Canadian paper companies will place them in position to successfully carry on a campaign for export trade to Great Britain and her colonies.

TO RE-ORGANIZE ONTARIO'S FOREST SYSTEM.

A delegation of influential citizens waited upon the Ontario Government recently in an effort to have the Provinces forestry laws amended.

This comes as a direct result of the destructive forest fire in northern Ontario a few months ago when only the excellent system of fire protection installed by the big Abitibi mills prevented the loss of many lives. This deputation, organized by the Canadian Forestry Association, will include representatives of the Canadian Bankers' Association, Manufacturers' Association, Pulp and Paper Association, Lumbermen's Association, Press Association, Mining Institute and Woodworkers' Union.

A memorandum will give evidence of the inadequacy of the Ontario forest service and present records of up-to-date protective system in other Provinces and some of the States of the Union. The total forest losses by fires in Canada up-to-date this year exceed \$7,000,000.

Word comes from New Brunswick that the Government is preparing plans for a re-organization of the whole forest protection system.

WHAT NEW YORK HAS DONE.

New York City newspapers have succeeded in making a very great reduction in the use of newsprint, as shown by the fact that during the seven weeks ending September 27th, they published 724 less pages of reading matter in proportion to the volume of advertising published than during the corresponding seven weeks of 1915.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

NEW YORK, N. Y., Nov. 27th.

According to the report in the Boston News Bureau the American Writing Paper Co., is planning a capital adjustment which will involve funding the back dividends on the preferred stock amounting to 112 per cent. It is well known that some readjustment of capital is inevitable before the bond issue matures in July, 1919, but the board of directors has taken no concrete step in this direction. There have been outside suggestions for a re-organization, but none has appealed to directors strongly enough to warrant official acceptance.

An increase in wages has been given to the employees of the Hinde & Dauch Paper Manufacturing Company, at Gloucester City, N. J., who are back at work, after a short strike. The men are now getting 5 cents an hour, which is an increase of about 8 cents an hour for the day shift of 11 hours, and \$3.25 for the night shift, for which they formerly got \$2.25.

According to the reports from Carthage, N. Y., James A. Outterson, president of the Carthage Sulphite Pulp and Paper Company is interested in the purchase of 80,000 acres of timber land between Mur-ray Bay and Tabousac, Que. This tract is estimated to contain over 800,000 cords of pulpwood and it is expected that it will take 16 years to clear it off. The price paid is said to be between \$250,000 and \$300,000.

More than 25 acres will be utilized as a location of the Fiber Fibre Company, the new \$300,000 wood pulp concern that has just been organized at Monistee, Mich. Work on the substructure has been begun, and the builders hope to have the foundation completed very shortly.

Co-operative purchasing of news-print paper by the members of the North Carolina Press Association, has been decided upon by the print paper committee of the Association as the only means of obtaining a supply during 1917 at a price that will enable the papers to exist. The committee met at Greensboro. Letters are to go forward at once to each member of the association asking for the sizes and the tonnage needed for 1917. An assessment of \$5 was asked of all who wished to join the pool to help defray the expenses of the committee in combatting the paper situation. The committee believes there is an excellent chance of this plan being put into effect and that it offers what appears to be the only plausible solution of the situation facing publishers.

The Westfield River Paper Company, expects to shortly resume operations at its plant at Russell, Mass. Much of the old machinery in the plant being removed and newer equipment installed. The mill will have a hydro-electric power plant of 750 volts and an auxi-

liary steam power plant of 250 horsepower. It is planned to put 60 men and a limited number of women at work at the outset. This working force will insure an output of 16,000 pounds daily.

The Meigs Pulpwood Company, Inc., has been chartered at Wilmington, Del., with a capital of \$100,000. Walter Meigs of 10 East Forty-third street, New York, is interested in the enterprise.

The King Paper Company, has just completed a new storage warehouse at Kalamazoo, Mich. The structure is three stories high forty feet wide and 200 feet long. Within two or three days after it had been finished there were over 2,177,000 pounds of stock in the structure.

A dispatch from Baltimore, Md., says the Columbia Paper Company, has applied for a permit to build the two story brick addition 53.8 by 43 feet to its factory at the southwest corner of Fort avenue and Sudlow street. Charles W. Anderson is the architect and the Consolidated Engineering Company the builder. The cost will be \$6,000.

The Automobile Trade Directory has been chartered at Dover, Del., with a capital of \$300,000. The incorporators are: A. Maurice Levine, Alexander Lewis, Carrol Hayes, all of New York.

Every effort is being made by contractors erecting the new paper mill being built by the Riverview Coated Paper Company at Kalamazoo, Mich., is being rushed to completion. Every available workman is being secured so that as much of the outside building work can be done as possible. The most of the brick work has been completed and within several weeks it is probable that the roof trusses can be put in position. It is doubtful if the new mill can be placed in operation much before the first of the year.

James A. Emery, general counsel of the National Association of manufacturers is authority for the statement that Japanese business men are ready to sell white paper in this country at a lower price than that asked by American and Canadian paper-makers. Mr. Emery states that he met a delegation of Japanese in California and they had told him of their plans. He thought at first that they had obtained their pulp from the forests of Manchuria, but inquiry developed that they had bought their logs in Canada, had converted it into paper in Japan, and then brought the paper back to this country.

Work of construction of the Hattiesburg Pulp and Paper Co.'s mill at Hattiesburg, Mass., is to commence next month. The plant, which will be located within the limits of the town, near the Leaf River will produce news-print exclusively it is said. The mill will cost \$1,500,000 and will be ready to add its tonnage to

the present supply January 1, 1918. Originally, it was the intention to erect a cardboard mill, at a cost of \$750,000, but after canvassing the matter it was into the manufacture of white paper.

* * *

Consul-General Carl Bailey Hurst writing from Barcelona, Spain, to the authorities at Washington says that the Spanish Government has officially recognized the shortage of paper and material by provisional legislation to foster the domestic industry. It is now discussing the expediency of granting a kind of credit intended to pay the difference between the price of paper before the declaration of war and the current price. The pronounced scarcity of pulp would and of the essential chemicals has seriously affected the home manufacture. Nevertheless various kinds of paper are actually exported from Spain in increasing quantities.

* * *

The control of the Remington Paper & Power Co., of Watertown, N. Y., has been turned over to D. R. Hanna for his sons Mark A. and Carl H. Hanna, who have become officers of the corporation and members of the board of directors. The Remington Co. operates three mills, with a capacity of 48,000. Mark A. Hanna becomes an officer in the financial end Carl H. Hanna takes an official position in the operating end, and both of them have taken up their duties at Watertown. Associated with Messrs. Hanna will be Mark L. Wilder who continues as president of the company. Birmingham and Seaman paper brokers; James Whelan of Port Arthur, who has large paper and wood interests in Canada. William P. Leech, vice-president and general manager of the Cleveland Company publisher of the Cleveland Leader and News, and others.

* * *

J. C. McAuliffe, President of the Georgia Press Association, has been appointed Chairman of a committee to investigate the feasibility of having some paper manufacturing company establish a plant in Georgia with a capacity of 200,000 pounds per day. Mr. McAuliffe states that he is in touch with a company that is willing to establish a \$2,000,000 paper plant in his section for the convenience of publishers in Georgia, Florida, and Alabama.

* * *

The price of chemical sulphite is governed by the cost of the foreign supply, according to Maury L. Freeman, Secretary of the American Wood Pulp Manufacturers' Association. The price of the foreign product, particularly that from Sweden and Norway, is high on account of the prevailing prices in that country the amount the Germans are willing to pay for it. Something like 205,640 tons of sulphite were shipped into the United States during the first seven months of this year. Of that amount Canada supplied 128,041 tons, compared with 130,801 for the twelve months of 1915 and 97,601 during 1914, while the Swedish supply has decreased from 11,407 tons a month to about 9,900 tons monthly. Formerly sulphite was purchased in terms of the American dollar—now it is bought at the value of the kroner—in Sweden.

"JOE" CATHCART MARRIED.

J. M. Cathcart, Superintendent of the Windsor Mills Canada Paper Company, Quebec, was married on the 16th of November, at Sherbrooke, Que., to Miss Jenny Audett of Sherbrooke. "Joe" as he is familiarly known to his friends on both sides of the line is a well known paper mill superintendent and Colour expert. After receiving the congratulations of their friends the happy pair left for a honeymoon trip including New York and Southern parts, on their return to Canada they will take up their residence at Windsor Mills.

RIORDON'S NEW BLEACHING PLANT.

The Officers and Directors of the Riordon Pulp & Paper Co., Ltd., were at their Merritton, Ont., mill on the 23rd, witnessing the commencement of bleaching sulphite fibre, in the new bleaching plant.

They were very much pleased with the successful starting up of the bleached process, as extensive construction has been conducted throughout the present year to convert the unbleached pulp into bleached pulp. About 30 tons per day will be manufactured by the Electrolytic System. A new acid plant, with reinforced concrete tower and sulphur storage, is in process of completion.

It is intended to supply the Canadian Mills with this product to the extent of their requirements and capacity of the mill. The quality of pulp this mill has been turning out has been a very strong and highly popular quality and as there is only one other mill bleaching sulphite in Canada, the new enterprise is of considerable importance to the paper making trade.

MANUFACTURE OF WOOD-PULP BAGS.

There has been much discussion in Chile regarding the desirability of establishing the wood-pulp industry. There seems to be an ample supply of wood and power, but the market is limited.

If it is found possible to make a substitute for jute sacking from wood pulp, the industry would undoubtedly flourish, as there are about 30,000,000 jute bags used annually in Chile for nitrate of soda, apart from that used for grains, minerals cement, and other purposes.

The import duty on jute sacks is one-half cent United States gold per pound and on Osnaburgs it is 4½ cents United States gold per pound gross weight. The jute sacks of 200-pound capacity are nominally worth about 9 cents on shore in Antofagasta.—(U. S. Commerce Reports).

The Department of Trade and Commerce have a request from a leading Russian house for paper-makers' supplies, can purchase large quantities for prompt delivery c.i.f. Vladivostok: of casein, blanc-fixe, dextrine and kaolin. Permanent connection likely.

NEW YORK BOOK PRICES ADVANCE.

New York book publishers and retailers have increased prices. Books formerly selling from 50 cents to \$1 now are rated 10 cents higher. Those in the past priced from \$1 to \$2 are sold at an increase of 25 cents each. Publishers claim there has been increase in price of paper, leather, cloth and ink amounting to from 50 per cent to 100 per cent during the past 12 months.

PULP AND PAPER NEWS

W. F. Christie, of the John Christie Co., paper stock dealers, Toronto, has returned from a two weeks deer hunting expedition in the northern part of Haliburton county. He was successful in killing a large buck which weighed two hundred pounds.

Capt. A. P. Miller, of Frankford, Ont., who is well known in pulp and paper circles and went overseas with the 21st Battalion, has just had a bar added to the Military Cross which he won. He enlisted as a Lieutenant and was mentioned in despatches for his bravery at St. Eloi where he was wounded.

A charter has been granted to E. A. Cole and Co., Limited, with a capital stock of forty-five thousand dollars and headquarters in Montreal. The company is empowered to take over and carry on as a going concern the business now conducted in Montreal and elsewhere by Walter O. C. Hillman as dealer in wholesale paper and stationery under the name of E. A. Cole and Co. The new concern is also authorized to do business as printers, publishers and lithographers and deal in paper and products and all kinds of stationery.

I. H. Weldon of Toronto, president of the Hartley Bay Hunt Club, has returned from a successful hunting trip on the French river. There were fifteen members in the party who captured fifteen deer—the full legal complement.

Work on the Welland ship canal, which will close down shortly, will not likely be resumed next year. It is said that operations will be suspended until after the war. The original estimate of the cost of the new waterway was fifty million dollars, but this sum will in all probability be exceeded owing to existing conditions in the labor market.

The new board mill of the Northumberland Paper and Electric Co., at Campbellford, Ont., is practically completed and will be in operation this month. The board machine which was built by the Downington Manufacturing Co., East Downington, Pa., is sixty-six inches wide, with three presses and six cylinders and will turn out twenty-five tons daily of straw board, chip board and filled board. The old mill was destroyed by fire in February last. The equipment of the mill consists of four beaters of fifteen hundred pounds each, three Jordan refining engines and three digesters, each of fourteen feet diameter. The power will be steam and electricity. The structures are all erected of stone and are connected except the boiler house and the machine shop. The machine room is 330 feet long by 40 wide and 20 high. The beater room is 110 feet by 40, two storeys high, the digester room 50 by 28 feet, two storeys, the boiler house 50 by 35 feet, the machine shop 60 by 30 feet and the warehouse 200 feet by 32. David F. Robertson is general manager of the company and Thomas McCook superintendent of the plant.

Major Frederick C. Tryon, who for the past five years was chief accountant of the Canada Paper Co., at Windsor Mills, Que., and enlisted with "C" Company in a Highland Battalion from Montreal for overseas service last spring, died on November 14th from his wounds. He joined the colors as a Captain and had been fighting for five months before being fatally wounded and had won his promotion on the field. Major Tryon was born in England, and was about thirty-four years of age. Previous to coming to Canada he served many years with the Imperial forces in India. He leaves a wife who is in England where his parents also reside.

The technical classes at Thorold, which are conducted two nights a week are being well attended. Sessions are held from eight to nine-thirty. The subjects taught are mechanical drawing, chemistry, arithmetic, English and electricity. Among the instructors are Mr. Bonus, principal of the High School, Miss Fraser of the same staff, and Mr. Skinner of the Ontario Power Co., who is the teacher in electricity. The success of the school is already assured.

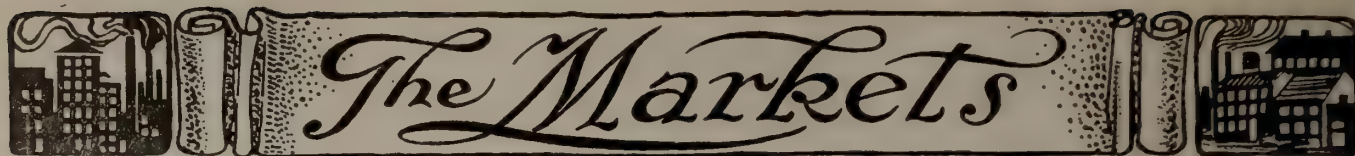
A big pulp mill is planned for British Columbia which will be the largest in the Dominion of Canada. W. M. Gilfoy, a leading timber limit owner, is one of those behind the proposition which will involve an expenditure of millions of dollars. The owners of the timber limits are from the middle west and eastern capitalists are behind the project.

J. G. Mayo, late assistant general manager of the Mattagami Pulp and Paper Co., Toronto, has taken an important position in the pulp department of the Canadian Fairbanks-Morse Co., Limited, and has entered upon his new duties.

George Kennedy, sales manager of the Warren Manufacturing Co., New York, spent a few days in Toronto and Montreal on business last week and called upon a number of members of the trade.

It is expected that the completely overhauled and enlarged plant of the Hout Paper Co. at Camden East, Ont., will be in operation about the middle of January. The new machine, which is being installed will trim 72 inches and will make manilla toilet and grease-proof papers. A siding has been built to the mill from the C. N. R. tracks and a bridge constructed across the Napanee river for the handling of freight.

Since the outbreak of the war no less than one hundred and eighty men employed in the plants of the Provincial Paper Mills Co., have enlisted for overseas. This number constitutes about thirty per cent. of the working forces of the company which is a splendid record.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The news-print situation continues acute and the demand is as great as ever. With Christmas coming on the publishers are facing heavy advertising and special editions with the smallest stocks in reserve in the history of the trade. The figure for the coming year has been fixed in the United States by the International Paper Company at three and a quarter cents less twenty cents freight, which means that the majority of publishers will pay three and a quarter cents delivered and where the freight rate is over twenty cents the consumer will have to pay the extra. The price has not yet been fixed in Canada, but will soon be adjusted. One company is receiving many offers from firms across the line who are willing to pay three and a quarter cents at the mill and take from twenty-five thousand tons a year up.

The air is full of rumors of new organizations and mergers of leading concerns in Canada, and while tentative negotiations have been entered into, nothing definite has so far resulted. The Canadian manufacturers do not fear an inquiry into news-print prices and some of the rate proffered for next year they will carry their case to the Supreme Court. The mills contend that news-print has all along been sold too cheap and that very few of the large operators in Canada have made any money. They see no reason why paper should be sold cheaper in Canada than United States customers are paying. If the Federal authorities interfere with the price named by the mill-owners declare they will sell their product to the consumers across the border. They do not fear an embargo on paper and could readily dispose of every pound of paper in Uncle Sam's domain. If any restrictions were placed on news it would retard the investment of American capital in the Dominion and give the industry a great set back and black eye, a condition of affairs which is inconceivable in view of the millions of dollars of foreign capital invested in pulp and paper plants in Canada.

Speaking of the news-print situation "Printer and Publisher", which is the organ of the Canadian Press Association, has it all cut and dried regarding what the cost should be. After referring to the recent conference at Ottawa, between the publishers and the representatives of the paper mills, that journal says: "Suffice it to say that the government favors the views and the position of the publishers and in this circumstance the publishers are taking comfort. The publishers are willing to concede that paper-makers are entitled to some advance on old prices, but not one from sixty to eighty per cent. The publishers favor a price slightly above two cents—an increase of rather less than twenty per cent. The certainty is that the paper-makers will be required to supply news-print at a figure very much less than three cents, and so the publishers are not so nervous about their own future as they were before their conference between their

committee and paper-makers. A three cent rate would, it is said, cost many a dailly in Canada \$7,500 a year extra—or perhaps more than the profits now being made and so a three cent rate would mean ruin for many papers. The weeklies would not be so hard hit and those who are getting an extra fifty cents a year for subscriptions are protected by this advance. It is probable that many dailies will increase their rates to both subscribers and advertisers as a measure of self protection and necessity to recover increased costs in other directions—the cost of labor, metal, supplies and the generally increased cost of living. This month or next it is probable that the maximum price for news-print will be established and one entirely favorable to Canadian publishers."

Papers-makers felts have up from sixty to ninety per cent. during the past month and ground wood pulp has more than doubled in price while labor is growing scarcer and wages higher all the time and in view of all these facts some publishers are willing to concede the news-print manufacturers an advance of twenty per cent. when cost of production has ascended over forty per cent. and is still climbing.

It is now generally conceded and accepted by the best posted authorities that Canadian made papers of all kinds will be scarce and high in price for the whole of 1917. To forecast conditions beyond this would be mere conjecture. The contributing causes to the abnormal conditions are the huge demand from Great Britain and the United States for pulp of all kinds and many grades of papers. Chemicals, coal, felts, wires, colors and other necessary ingredients and machine parts are at a premium and becoming more difficult to secure. Owing to the call of the Empire for men, a serious shortage of labor exists and what help is secured by the mills is green and inexperienced and incapable until taught their particular duties. General overhead expenses are increasing at a rapid rate in spite of all that can be done and are proportionately greater in a great many cases on account of the reduction of production.

Touching upon the condition in the various lines of papers, outside of news and book papers a leading wholesale paper merchant this week said: "In toilet papers all the mills appear to be doing their best to cope with the business offered and are shipping as well as can be expected under the circumstances. Most mills are booked up with old orders and still have many months to run. Higher prices are expected. Manillas are being sold by most mills at prices ruling at the time of shipment and the plants are five to six months behind. In fibres all orders are limited as to quantity. There is a large demand and certain mills cannot accept further orders. The shipments of kraft are very slow and mills are behind for several months to come. It is hard to get any mill to accept orders at the present time for grey browns no matter at what price. In white tissues the Canadian mills are sold up and cannot offer any owing to attringency of raw

materials and unknown knowledge as to price of pulp. In grease proof, manifold papers and glassines Canadian manufacturers are unable to cope with the demand and today's prices should be considered low."

Book and writing mills are rushed to the limit with orders. All bond papers were jumped from one to two cents during the past fortnight according to grade.

The price of ground wood is now forty dollars and up at the mill and quantities are very limited. Mechanical pulp is rising more steadily and firmly than any other commodity just at the present time and those, who have studied the market closely predict with every assurance, that the figure will reach sixty dollars before spring. Ground wood pulp has more than doubled in quotations during the past three or four months. Sulphite continues to sell from one hundred and ten to one hundred and twenty at the mill, book variety. Contracts have been made with a large number of old customers for one hundred and ten at the mill during the coming year, and on this basis one large concern has disposed of about eighty per cent of its output. There has not been any advance for the past month. Bleached sulphite remains around one hundred and fifty-five to one hundred and seventy at the mill.

Tissue paper is very firm and although there have been several raises in price during the past few months, business keeps up at a great rate. Toilet papers were advanced fifteen per cent early in the month and may go higher before the end of the year. It is believed that there will be no change in wrappings for a considerable time as prices are now more than one hundred per cent higher than a year ago. Several consumers are adopting a policy of strict economy in regard to the use of fibres and manillas owing to the unprecedented values. No. 1 tissue napkins went up five cents per thousand a few days ago and No. 2 ten cents per thousand.

Here is an itemized list of ruling prices which was sent out recently by a leading paper house in Toronto and represents what the consumer pays:

	Two Small Carload Tons. Lots. Cents.		
No. 1 Unglazed Kraft	8 1/2	9 1/2	11
M. G. Kraft, such as M. G. Fine-stripe and Broadstripe	9	9 1/2	11
No. 1 Fibre	7 1/2	8	8 1/2
No. 2 Fibre	7	7 1/2	8 1/4
No. 1 Manilla	7 1/2	8	8 1/2
No. 2 Manilla (Off the market)			
No. 3 Manilla	5 1/2	6	6 1/2
Grey Brown	4 1/2	5	5 1/2
White Wrapping	4 1/2	5	5 1/2
Rope Papers, per lb.	14		
Tag Manilla	7 1/2	8	8 1/2
News-print in Rolls	3	3 1/2	4
News-print in Sheets	4	4 1/2	5
S. C. Drug, 30 and 40-lb.	7	8	9
M. G. Sulphite Drug, white and tints, 27-lb.	10	11	12
Gen. Veg. Parchment, 30-lb. and up.	23	25	30
Gen. Veg. Parchment, 25-lb.	24	26	32
Greaseproof Natural, 24-lb.	14	16	18
Greaseproof Natural, 20-lb.	15	17	20
Greaseproof Half Bleach, 25-lb.	16	19	21
Greaseproof Half Bleach, 20-lb.	17	20	22
Greaseproof Full Bleach, 25-lb.	18	21	23
Greaseproof Full Bleach, 20-lb.	19	22	24

White Waxed Tissue, 9x12-480	65
White Waxed Tissue, 12x18-480	130
White Waxed Tissue, 18x24-480	260
Butchers Waxed Manilla, 40-lb. and up.	7 1/2 8 1/2
Waxed Fibre, 40-lb. and up	10 11

In the rag and paper stock arena, books and ledgers recently took a big jump. News is in active demand with prices strong. Mixed scrap is firm and white shavings and kraft practically at a premium. The mills are all very busy with the Northumberland, Houpt and Stratheona plants coming on the market soon with new machines. The demand is still quiet for roofing stock and new cotton rags, thirds and blues are packing up.

The latest Toronto f.o.b. quotation are:

No. 1 hard white shavings	\$5.10
No. 1 soft white shavings	\$4.50
No. 1 mixed shavings	\$1.00
White blanks	\$1.60
Heavy ledger stock	\$3.00
Soft ledgers and writings	\$1.50
No. 1 magazines	\$2.05
No. 1 book stock	\$1.95
No. 1 manilla envelope cuttings	\$2.40
No. 1 print manillas	\$1.40
Folded news	.90c
Over issues	.90c
No. 1 clean mixed paper	.80c
Kraft	\$3.25
Old white cotton	\$4.65
Thirds and blues	\$2.85
No. 1 white shirt cuttings	\$7.00
Black overall cuttings	\$2.75
New light flannelettes	\$5.25
Ordinary satinettes and flock	\$1.80
Tailor bags	\$2.00

The following are the Toronto prices:

Paper.

News (rolls) \$3.00 up, at mill, in carload lots.	
News (sheets), \$3.25, at mill, in carload lots, smaller lots higher.	
Book papers (carload), No. 3	\$7.00
Book papers (ton lots), No. 3	\$7.50 to \$8.00
Book papers (carload), No. 2	\$8.50 to \$9.00
Book papers (ton lots), No. 2	\$9.00 to \$9.50
Book papers (carload), No. 1	\$9.00 to \$9.75
Book papers (ton lots), No. 1	\$9.50 to \$10.50
Sulphite bonds	12c up
Writings	9 cents up.
Grey Browns	\$4.25 to \$5.00
Fibre	\$7.25 to \$8.50
Manila, No. 1	\$7.25 to \$8.50
Manila, B.	\$5.00 to \$6.50
Unglazed Kraft	\$8.50 to \$11.00
Glazed Kraft	\$9.00 to \$11.00
Tissues, bleached	\$1.60 to \$2.30
Tissues, (manila or white sulphite)	\$1.20 to \$1.60
Tissues, cap.	.80c to \$1.15
Natural, greaseproof	13c to 18c
Half Bleached Greaseproof	15c to 19c
Bleached greaseproof	17c to 21c
Genuine Vegetable Parchment	.25c to 30c
Drug papers, whites and tints	10c to 13c
Paper bags, Manila	20% discount
Paper bags, kraft, list prices increased 50% with	35% discount
Confectionery bags, list prices increased 50% with	25% discount

Pulp.**F.O.B. Mill.**

Ground woodpulp	\$40.00 up
Easy Bleaching Sulphite	\$110.00 to \$120.00
Sulphite, news grade	\$110.00
Sulphite (bleached)	\$160.00 to \$180.00
Sulphate	\$120.00 to 125.00

	Car load.	1-ton and up.	Less than 1-ton.
Gray brown	\$4.25	\$4.50	\$4.85
News counter rolls	4.25	4.50	4.85
B. Manila	5.00	5.35	5.75
No. 1. manila	7.25	7.75	8.50
Fibre (basis 24 x 36, 40-lbs. or heavier)	7.25	7.75	8.50
Fibre (light and down to 30 lbs.)		5% extra.	
Samson "B" fibre and all corresponding brands ..	6.75	7.25	8.25

In the rag and paper stock market there has been an advance in hard, soft and mixed shavings and in book and ledges stock. Cotton and roofing rags are declining. The mills generally have not been buying much stock during the past few days.

The latest quotations are:

Paper Stock.

No. 1 hard shavings	\$4.90
No. 1 soft white shavings	\$4.40
No. 1 mixed shavings .....	.85c
White blanks	\$1.45
Heavy ledger stock	\$2.70
No. 1 book stock	\$1.62½
No. 1 Manila envelope cuttings	\$2.40
No. 1 print Manilas	\$1.25
Folded news .....	.85c
Over issues .....	.85c
No. 1 clean mixed paper .....	.80c
Old white cotton	\$4.65
Thirds and blue	\$2.60
No. 1 white shirt cuttings	\$7.00
Black overall cuttings	\$2.60
New light flannelettes	\$5.25
Ordinary satinets and flock	\$1.80
Tailor Rags	\$1.90

MONTREAL MARKETS.**Book—News—Writing and Posters.**

Roll News, \$3.00, f.o.b. mill, for carloads proportionate increase on small lots.

Sheet News, \$3.25 to \$3.50, at mill carloads, \$3.75 up for small lots.

No. 1 Book, 7.50 to 8.25.

No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.

No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.

Writings, \$8.00 to \$10.00.

Writing Manila 6.95.

Cover papers, 11 to 14½c, according to colors wanted.

Colored Poster, 6½ to 7½c.

An extra charge of 10c per 100 lbs. will be made when Book Papers are packed in frames, and 15c per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs....	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40, down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs...	3.40	3.65	3.90

NEW YORK MARKETS.

NEW YORK, N. Y., Nov. 27th.

Quotations reaching as high as \$40 per ton have been heard in the ground wood pulp market. It is admitted that such a price has not yet been paid, although there seems little doubt that it will soon be impossible to get stock for less money. While no reach difference, in the way of development, has been recorded since our last issue, the steadily tightening attitude of the market is plainly visible to those who have occasion to go among the sellers of ground wood. Comparatively speaking, there is nothing to offer, at the present time. The mills are all sold up for the rest of the year, while some manufacturers report that they will be unable to take orders for new goods for the first months of the coming year. However, the demand continues strong and even appears to be taking on added strength. In view of this fact, the situation is assuming a seriousness which is causing worry to many of the paper manufacturers. In the first place, the long spell of dry weather has been wrecking havoc with the water power in many sections of the country. As a result, it is known that a large number of grinders have not been able to keep their machines going steadily, thus being forced to lose considerable production at a time when they need it most. With the cold weather now imminent, there is the likelihood of rivers freezing and further demoralizing this power which is so essential to the manufacture of ground wood. This is significant that despite the efforts of the grinders, the production of pulp for the next several months will not be normal and will certainly be far from sufficient to take care of the unusual demand. There is no doubt as to what proportions this demand will take, judging from the conditions in the paper market which are now so familiar to us all. It has been argued in some circles that the re-election of Woodrow Wilson to the presidency of the United States may be of some material help, because it may have the influence of encouraging the Canadians to try harder to get a bigger permanent hold on the trade in this country. These hopes were somewhat hampered by rumors coming from upper New York State, to the effect that Great Britain was preparing to requisition the entire production of the Canadian paper and pulp mills. Mill men in this section, however, are not inclined to place much credence in this rumor.

The consumption of ground wood has increased to such a point where it is undoubtedly at the apex of the greatest in the history of the country. When it is realized that domestic grinders welcome Canadians to ship stock into the United States, it can be understood that the situation is very precarious. For, even with the pulp coming from the Dominion there is still a noticeable—a very noticeable shortage.

Predictions are being freely made that the coming winter will be, most likely, the severest ever known, so far as chemical pulp is concerned. While none of the local importers have yet received advices of freezing along the Baltic Sea, this is due just about this time. In fact, it is believed that within another month, the upper part of the Baltic Sea will be absolutely unnavigable, which means that, in order to get pulp from the mills along this section, it will be necessary to ship the goods overland by freight. Such action, however, is not probable, for the foreign pulp manufacturers have not been showing a favorable disposition for some time. In fact, they seem to have been looking for excuses to keep their American shipments down to a minimum. With the Baltic close to navigation for the winter, our Scandinavian supply of pulp will be reduced to the lowest volume on record. Present shipments are not considered as affecting the market one way or the other, for they are entirely on old contract and going into immediate consumption. Complaints are made that it is difficult to communicate with Sweden by cable, owing to the British censors.

The stocks on hand at the domestic mills are believed to be very low. In fact, it has been a wonder to the supply men to find that the mills have been able to get along in what appears to be such fine shape. This is attributed to the aid being received from Canada. For without Canadian pulp, there would undoubtedly be chaos in the United States paper market. To quote prices in sulphites, is ridiculous, for anyone who has stock, is getting just what the buyer will bid for it. And in some cases, the buyer is willing to break a good many precedents in order to get the pulp. Foreign bleached sulphite, for instance, is almost unobtainable. Such prices as 9c, 10c and higher have been heard for this commodity. Domestic bleached sulphite is firm, with most of the mills sold ahead and unable to take new business. One sale of domestic unbleached was recently reported at 8c. The strong demand for easy bleaching sulphite continues, because of the situation just related in bleached. However, there is but little stock available, for which, it is understood, one must pay at least 6½c. Unbleached sulphite is firm and hard to obtain and is being held at 5½c and higher, for the foreign—and 5c and higher for the domestic. Consumers of kraft pulp will be confronted with a situation which promises to be much more acute than even the sulphite one. There is practically no sulphite being offered at the present time. Those mills which are not consuming their own pulp, have sold the rest of their output. Prices are nominal, although some importers claim it is at 6c to 7c.

Perhaps the best way to describe the rag market, would be to use the language of one of the local dealers who called it a "Deadlock". While a certain amount of buying is going on all of the time, there is a decided lack of activity which is customary at this time of the year and which, it was expected, would surely be experienced during a period when the demand for paper was as keen as it is now. The mills

have been unusually cautious, having learned a lesson during the early part of the year, when the market soared to a remarkable height. It is apparent that they have determined to forestall any repetition of this occurrence and are acting accordingly. Prices on all grades are about the same as we mentioned them in the last issue of the paper.

The situation in bagging is very puzzling for, despite the demand for jute papers and the scarcity of raw stock, there appears to be no activity to the market. Gunny is holding to about 2¾c to 3¼c; bright bagging is at 2¾c sound bagging is at 2½c. Rope has been growing firmer, under a good demand a growing shortage and is now quoted as high as 6¼c.

The demand for all grades of waste papers continues strong and indications are that more improvement will be shown from time to time. Where formerly, the board mills formed the largest portion of the consumers of this stock, there is today in the market a number of other factors, each of which is anxious to get the stock and to pay a good price for it. Hard white shavings are active at 5½c to 6c for the better selections. Soft white shavings are going at about 4¾c to 5c; old krafts have gone up to 3½c; magazines are at 2c to 2¼c; ledger stock is held for 2¾ to 3c; mixed papers are quoted at 85c.

In the paper market, there is nothing new to offer. The flood of notice of advances in price, which were being sent out by the paper mills is just as strong now as it was before. It seems that each time an order is placed the price is greater than the previous figure which was paid for the goods. In wrappings, it is difficult to get stock, because the mills are all sold ahead. However, reports of sales by jobbers to jobbers, at very high prices have been recorded. Tissues are practically out of reach. The sulphite situation has reflected strongly on the bleached tissues which are almost unobtainable at \$1.25. The demand for the inferior grades of tissues is also very strong. Book papers are firm, with most of the mills sold ahead on super. Boards are soaring and the mills have little to offer.

The situation in the news-print market has enjoyed absolutely no relief despite all of the schemes under way which are designed to ease conditions by effecting a reduction in the consumption of the paper. The time is now approaching for the making of new contracts with the newspaper publishers and considerable interest is manifested in what will occur. There is no doubt, so it seems, that any contracts will be renewed at less than 3c. In many instances, no contracts.

R. W. JOLLY.

The following quotations are purely nominal:

Pulps.

Ground Wood, No. 1, at pulp mill.....	\$36 to \$40
Unbleached Sulphite, dom., at pulp mill.....	5c to 6c
Easy bleaching, impt.....	6¼c to 6¾c
Unbleached foreign, ex-dock, N.Y.	5¼c to 6¼c
Kraft, ex-dock, N.Y.	6c to 6¾c
Bleached, domestic, at pulp mill.....	7¼c to 8c
Bleached, foreign, ex-dock, N.Y., (and higher)....	9c

Paper.

News (rolls), at mill, in carload lots,	\$4.00 up
News (sheets), at mill, in carload lots,	\$4.25 up
New contracts, rolls,	\$3.10
Jobbers, as high as	5½c
Book papers (carload), No. 3.....	8c
Book papers (ton lots), No. 3.....	9c
Book papers (carload), No. 2.....	9½c

Book papers (ton lots), No. 2.....	10c up
Book papers (carload), No. 1.....	10 $\frac{1}{4}$ c up
Book papers (ton lots), No. 1.....	11c up
Sulphite bonds	9c up
Writings:.....	11c up
Ledgers,.....	12c up
Fibre.....	\$4.75 to \$6.00
Manila, No. 1.....	6c up
Manila, No. 2.....	5c up
Manila, B.	4c up
Unglazed Kraft.....	\$7.50 to \$10.00
Glazed Kraft.....	\$9.00 to \$12.00
Tissues, bleached.....	90c to \$1.50
Tissues, unbleached	\$1.35
Tissues, manila.....	\$1.20

PLANTING ON HIGHWAYS.

Arrangements have been completed for co-operation between the Pennsylvania Department of Forestry and the State Highway Department in planting shade and fruit trees along the State highways. The Department of Forestry will grow the trees from seed in its big nurseries. They will be transplanted into areas set aside for the purpose, and when they have reached suitable size the trees will be turned over to the Highway Department and private good-roads organizations for planting.

California's ever-threatening forest fires of the dry season hold a minimum of menace to the great tract of redwood trees, because the bark, several inches thick, is almost fireproof.

Tenders for Pulpwood and Pine Limit.

Tenders will be received by the undersigned up to and including the 1st day of February, 1917, for the right to cut pulpwood and pine timber on a certain area situated on the Black Sturgeon River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure, for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario.

Parties making tender will be required to deposit with their tender a marked cheque payable to the Honorable the Treasurer of the Province of Ontario, for ten thousand dollars (\$10,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$10,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned.

G. H. FERGUSON,

Minister of Lands, Forests and Mines.
Toronto, 1916.

WAR THE GREAT SCHOOL TEACHER.

(Southern Lumberman).

It isn't a pleasant thought—that nations learn more in a few months of war than in many years of peace; but in any such case, the question is not whether it is pleasant but whether it is true. Almost every day there comes from England, in the throes of war, some item of news that in peace times would seem to the English like a revolution. In a measure the same thing is true of all the belligerent nations. Changes are coming everywhere and the world will not be the same world when the war is ended.

WANTED

Second-hand ground wood mill equipment to include grinders, wet machines, pumps, hydraulic presses and if possible, turbines adaptable to 20 feet head.

MONTREAL ENGINEERING CO., LIMITED,
164 St. James St., - - - - Montreal.

RELPH, DARWEN & PEARCE

76 FINSBURY PAVEMENT,
LONDON, E.C.

Paper, etc., Agents

Importers and Exporters of all classes of Paper.

Specialities: Wrappings and Boards of all kinds.

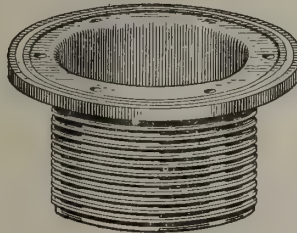
Also Importers and Exporters of Woodpulp and other Paper making materials.

Also Timber and Boxboard Agents.

(Established 1894).

"WORLD" Acid Resisting Bronze Digester Top Sleeve Casting

Manufacturers of
High Grade Specialties
for
PULP MILLS



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SPECIFICATIONS**

T. McAVITY & SONS, LTD.

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**HARDWARE AND METAL MERCHANTS
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Branch at
WINNIPEG

Established 1834

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Incorporated 1907

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The only protection against the action of Acid and Chemical Fumes. Used by the leading Paper Mills. Made in England by Griffiths Bros & Co., London Contractors to the Admiralty and War Office.

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Do better Beating and Brushing than Tub-beaters, and that you can save $\frac{1}{3}$ of the cost, $\frac{1}{2}$ the power, and $\frac{1}{4}$ of your floor space, by using them?

They Work Successfully on all Kinds of Stock

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BOILER PRESERVATIVES are unlike anything else on the market and we can show you testimonials from the largest paper mills in America and five reasons why they will save you 25 per cent or more on your fuel bill, without polluting your steam.

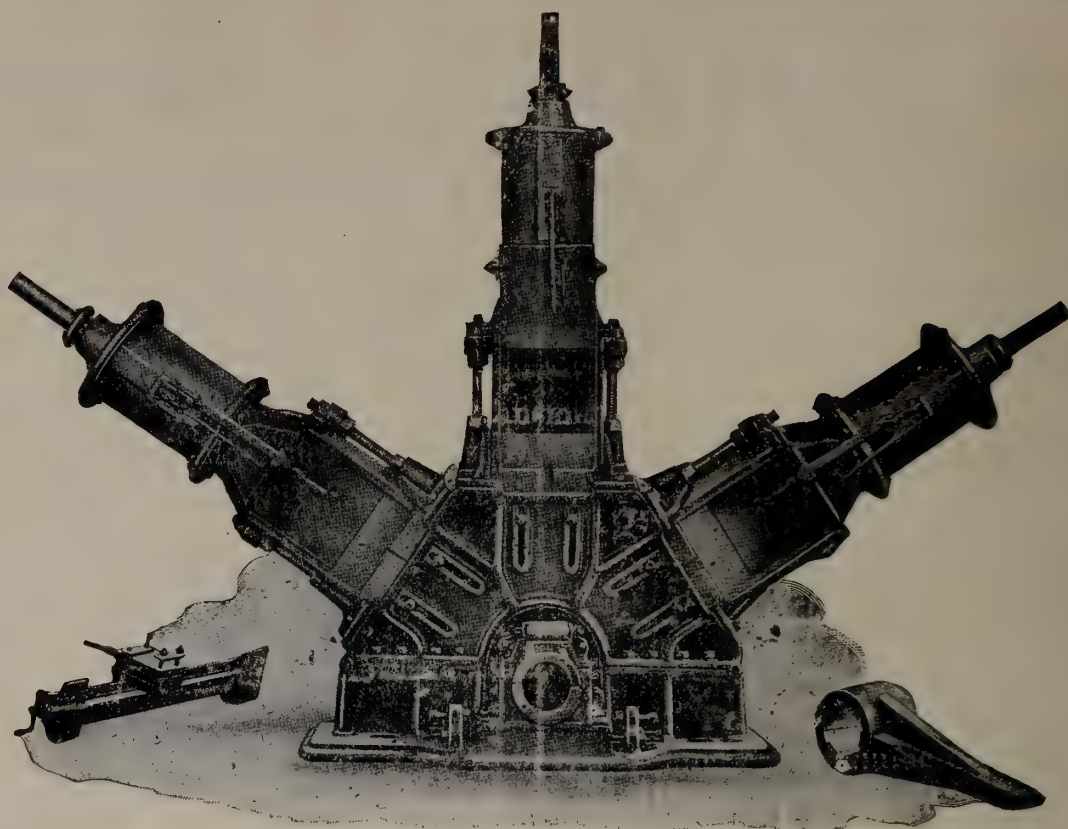
Agents for LOCKPORT FELT CO'Y.

Lockport Woolen Superfine Wet and Press Felts.
Fine felts for fine papers.
Best felts for all papers.

A trial will convince you that they mean the minimum cost per ton paper made and that is what counts.

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Everything in Vulcanized Fibre including Receptacles, Trucks, Gears, etc.



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A permanent business in Canadian Pulp can be established in Italy if the proposition is tackled at once while the Scandinavians are out of the market.

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vice.

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Pulp and Paper Mills, particularly under present conditions, require that the power generated be transmitted without loss to the various machines. Present demand and prices make it absolutely essential that there be no lost power, and **AMPHIBIA** leather belting will transmit your power without loss, even on your Fourdriner Machines, Jordans, Beaters, etc., where the variation of load makes the service severe.

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To insure satisfaction state where belt is to run.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

- Acidproof enamel:**
Spielman Agencies Regd., Montreal, Que.
- Acid Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Air Compressors:**
Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
- Alum:**
Kalbfleisch, Franklin & Co., New York.
- Aluminium:**
Spielman Agencies Regd., Montreal, Que.
- Barkers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
- Bearings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Beaters:**
Bertrams Ltd., Edinburgh, Scotland
Clafin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Belting:**
Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.
- Belt Conveyors:**
The Jeffrey Mfg. Co., Montreal, Que.
- Bleaching Powders:**
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.
- Bleach Systems:**
Advance Engineering Co., Ltd., Toronto, Ont.
- Blowers:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.
- Boilers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Boilers—Water Tube:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Brass Wire Cloth, Fourdrinier Wires:**
Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
- Cable Conveyors:**
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Calendar Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.
- Carriers:**
Northern Crane Works, Walkerville, Ont.
- Cars, Dump and Flat**
Canadian Equipment Co., Montreal.
Fraser, W., Montreal
Sessenwein Bros., Montreal
- Casein and Satin White:**
Kalbfleisch, Franklin & Co., New York.
- Castings:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.
McAvity T. & Sons, Ltd.
- Chain Crane:**
Northern Crane Works, Walkerville, Ont.
- Chain Blocks:**
The Jeffrey Mfg. Co., Montreal, Que.
- Chain Conveyors:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chain Drives (Silent and Steel Roller):**
Jones and Glassco, St. Nicholas Building, Montreal.
- Change Speed Gears:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Chemicals, Colors, Etc.:**
Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chimneys:**
Canadian Kellogg Co. Ltd., New York.
- China Clay:**
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.
- Chippers:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Disintegrators:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Chip Screens:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Clutches:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Coal and Ash Conveyors:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Condensors—Barometric:**
Canadian Kellogg Co. Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Conveying Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Couch Rolls:**
Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Counter Shaft Fixtures:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son, Co., Chicago.
- Couplings:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cranes:**
Canadian Equipment Co., Montreal.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cranes—Electric:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Cranes—Hand Power:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cranes—Overhead Travelling:**
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Cut Gears:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Cylinders:**
Bertrams, Ltd., Edinburgh, Scotland.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Covers:**
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Moulds:**
Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Cylinder Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Dandy Rolls:**
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johr son & Sons, C. H., St. Henry, Montreal, Canada.
- Diffusers:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Digesters:**
Canadian Kellogg Co. Ltd., New York.
- Digester Fittings:**
McAvity T. & Sons, Ltd.
- Digester Lining:**
Advance Engineering Co., Ltd., Toronto, Ont.
Panzi Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
- Dryers:**
Bertrams, Ltd., Edinburgh, Scotland.
- Electrical Specialties:**
Spielman Agencies Regd., Montreal, Que.
- Enamels, machine:**
Spielman Agencies Regd., Montreal, Que.
- Engines:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

MILL SUPPLIES---Continued

Evaporators:

Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada
Scott, Ernest & Co., Fall River, Mass.

Exhausters:

The Sherbrooke Machinery Co., Sherbrooke, Que.

Experimental Machinery:

Process Engineers, Ltd., Montreal, Canada.

Exporters:

Parsons Trading Co., New York, N.Y.

Felts:

Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson, C. H. & Sons, St. Henry, Montreal, Que.

Filters:

Darling Bros., Montreal, P.Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.

Friction Hoists:

Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Gages:

Darling Bros., Montreal, P.Q.

Gears:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grate Bars:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Grinders:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Hangers:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Hand Power:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.

Heaters:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Helicoid Conveyor:

H. W. Caldwell & Son Co., Chicago.

Hoists:

Darling Bros., Montreal, P.Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.

Insulating Varnishes:

Spielman Agencies Regd., Montreal, Que.

Iron Castings:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Iron Pulleys:

H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Jordan Engines:

Jones, E. D. & Co., Pittsfield, Mass.
Joble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.

Knives:

Disston, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hay, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Knives, Paper Cutting:

Galt Knife Co., Ltd., Galt, Ont.

Kollergangs:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited Lindsay, Ont.

Lanterns, Electric:

Spielman Agencies Regd., Montreal, Que.

Locomotives:

Canadian Equipment Co., Montreal.
Montreal Locomotive Works, Ltd., Montreal.

Locomotives, Re-built:

Sessenwein Bros., Montreal
Fraser, W., Montreal

Paints:

Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.

Paper Stock, Etc.:

Pullan, E., 490 Adelaide Street W., Toronto, Canada.

Paper and Pulp Machinery:

Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Booter & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Downingtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
More & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P.Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmisley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

Paper Tester:

The Waterous Engine Works Co., Limited, Brantford, Ont.
H. Enas Wilkinson, Toronto, Ont.

Penstocks:

Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Pillow Blocks:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Piping—High Pressure:

Canadian Kellogg Co. Ltd., New York.

Piping—Hydraulic:

Canadian Kellogg Co. Ltd., New York.

Piping—Power Plant:

Canadian Kellogg Co. Ltd., New York.

Piping—Welded:

Canadian Kellogg Co. Ltd., New York.

Pneumatic Thickeners:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.

Presses:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Can. Booter & Boschert Press Co., Montreal, Canada.

Press Rolls:

Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Pulleys:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Pulp Stones:

Lombard & Co., Boston, Mass.
Stancilffe Estates Co., Ltd., Darley Dale, England.

Pumps:

Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P.Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
McAvity T. & Sons, Ltd.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Radial Brick:

Canadian Kellogg Co. Ltd., New York.

Railway Equipment—Scrap

Sessenwein Bros., Montreal

Rails—re-laying:

Canadian Equipment Co., Montreal.
Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal.

Refiners:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Reinforced Concrete:

Canadian Kellogg Co. Ltd., New York.

Rope, Cotton and Manila:

Jones and Glassco, St. Nicholas Building, Montreal.

Rope Wheels:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Rosin Size:

Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Rosin Size Boilers and Dissolvers:

Process Engineers, Ltd., Montreal, Canada.

Rotary Sulphur Furnaces:

Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.

Safes:

Goldie & McCulloch Co., Ltd., Galt, Ont.

Salt Cake:

Kalbfleisch, Franklin & Co., New York.

Save-Alls:

Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Screen Plates:

Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.

Screens:

Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal, Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

MILL SUPPLIES---Continued

- Shafting:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Shredders:**
The Jeffrey Mfg. Co., Montreal Que.
- Slitters and Re-Winders:**
Bertrams, Ltd., Edinburgh, Scotland.
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Smoke Stacks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Soluble Blue:**
Brandram-Henderson Ltd., Montreal.
- Spiral Conveyor:**
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Split Pulleys—Wood and Steel:**
The Jeffrey Mfg. Co., Montreal Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sprockets:**
The Jeffrey Mfg. Co., Montreal, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Stacks:**
Canadian Kellogg Co. Ltd., New York.
- Steam Appliances:**
Canadian Equipment Co., Montreal.
Darling Bros., Montreal, Que.
- Steam Regulator:**
Pickles, W. F., Buckland, Conn.
- Steel Barrels:**
The Smart-Turner Machine Co., Hamilton, Ont.
- Steel Drums:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Smart-Turner Machine Co., Hamilton, Ont.
- Stokers—Mechanical:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Penmans, Ltd., St. Hyacinthe, Canada.
- Strainers—Water:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Straw Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Straw Dusters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Strawboard Making Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
- Structural Steel Works:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Stuff Chests:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Suction Couch:**
Process Engineers, Ltd., Montreal, Canada.
- Sulphite Mill Equipment:**
Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphate of Alumina:**
Kalbfleisch, Franklin & Co., New York.
- Sulphate of Soda Calcined:**
Kalbfleisch, Franklin & Co., New York.
- Sulphate Mill Equipment:**
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphur:**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners:**
Advance Engineering Co. Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
Watrous Engine Works Co., Ltd., Brantford, Ont.
- Superheaters—Steam:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Tanks:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Tanks—Welded:**
Canadian Kellogg Co. Ltd., New Yr
- Transmission Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones & Glasco, Montreal, Canada.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Transmission Rope:**
Jones & Glasco, Co., Montreal, P. Que.
The Watrous Engine Works Co., Limited Brantford, Ont
- Traveling Cranes:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
Smart-Turner Machine Co., Limited, Hamilton, Ont.
- Trolleys:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Tube Cleaners:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Turbines:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurttemberg, Germany
- Valts and Valt Doors:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Water Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que
Smith, S. Morgan Co., York, Pa.
- Wire Cloth for Paper Machines:**
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste:**
Hough, R., London, England.
- Wet Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.

Booth, J. R., Ottawa, Ont.

Bronson Co., Ltd., Ottawa, Ont.

Campbell Lumber Co., Weymouth, N.S.

Canada Paper Co., Ltd., Montreal, Que.

Chicoutimi Pulp Co., Chicoutimi, Que.

Davy, James, Thorold, Ont.

Eddy Co., The E. B., Ltd., Hull, Que.

Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.

Ford, J. & Co., Port Neuf, Que.

Jacques-Cartier Pulp & Paper Co., Montreal.

Jonquiere Pulp Co., Ltd., Jonquiere, Que.

Lake Megantic Pulp Co., Lake Megantic, Que.

Laurentide Co., Ltd., Grand Mere, Que.

MacLaren Co., Ltd., The James, Buckingham, Que.

McLeod Pulp Co., Ltd., Liverpool, N.S.

News Pulp & Paper Co., Ltd., St. Raymond, Que.

Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.

North Shore Power, Railway & Navigation Co., Clarke City;

Northumberland Pulp Co., Campbellford, Ont.

Ontario Paper Company, Thorold, Ont.

Powell River Co., Ltd., Powell River, B.C.

Price Bros. & Co., Ltd., Kenogami, Que.

Price-Porritt Pulp & Paper Co., Rimouski, Que.

Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.

River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, Ont.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., East Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfound-
land.
Bathurst Lumber Co., Limited, Bathurst, N.B.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Ont.
Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristol:

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Gummed Paper Manufacturers:

Gumme Papers Ltd., Brampton, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B., Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Albertson, D. J.	64
Ambursen Hydraulic Construction Co., Ltd.	11
American Newspaper Publishers Association	3
Ayers, Ltd.	68

B

Babcock & Wilcox, Ltd.	65
Bates & Innes	68
Barker, E. R.	64
Becker & Co.	67
Beloit Iron Works	14
Bertram, James & Son, Ltd.	10
Bertrams, Ltd.	2
Beveridge Paper Co Ltd.	417
Beveridge, Jas., Chatham, N. B.	
Black-Clawson Co.	
Boving Hydraulic & Engineering Co. Limited	6
Bowater, W. V. & Sons, Ltd.	8
Brandram-Henderson Ltd.	45
The Bronson Company	

C

Caldwell, H. W. & Son, Co.	18
Cameron Machine Co.	65
Canadian Boomer and Boschert Press Co.	418
Canadian Fairbanks-Morse Co., Ltd.	13
Canadian Kellogg Company	7
Canada Paper Co., Limited	66
Canadian Westinghouse Co., Ltd.	13
Capital Wire Cloth Mfg. Co., Ltd.	60
Carthage Machine Co.	
Chambers, Ltd.	2
Chicoutimi Pulp Co.	67
China Clay Co.	62
Christie George, Ltd.	
Churchill & Sim	
Claflin Engineering Co.	417
Crossley, T. L.	65

D

Darling Bros., Ltd.	
DeCew, J. A.	64
Dean & Son	8
Dept. Lands, Forests, Mines	416
Disston, H. & Sons, Ltd	6
Dominion Belting Co.	65
Dominion Pulp Woods' Limits	54
Downington Mfg. Co.	16
Dunlop Tire & Rubber Goods Co., Ltd.	

E

Eaton & Brownell	64
The E. B. Eddy Co., Ltd.	66
Emerson Mfg. Co.	9

F

Farrel Foundry & Machine Co.	
Ferguson, H. S.	64
J. Ford & Company	62
Fraser, W.	

G

Galt Knife Co., Limited	63
Gartshore, Jno. J.	65
Glens Falls Machine Works	6
Goldie and McCulloch Co., Limited	

H

Hardy, Geo. F.	64
Hay Knife Co., Peter, Ltd.	62
Hersey, Milton Co.	65
Hooker Electrochemical Co.	65
Huestis, A. M.	61
Huyck, F. C., Sons.	12

J

Jeffrey Mfg. Co.	
Jenssen, G. D. & Co.	64
Jenckes Machine Co.	14
Johnson & Sons, Ltd., C. H.	18
Johnson, Chas.	4
Jones, E. D. & Sons, Co.	17
Jones & Glassco.	

K

Kalbfleisch Co.	61
Kimball H. S.	4
Klipstein, A. & Co., Ltd.	7

L

L'air Liquide Société	61
Lawrence Machine Co.	9
Laurentide Co., Ltd.	63
Little, Arthur D., Inc.	65
Lombard & Co.	

M

Mackinnon, Holmes & Co.	13
Main Belting Co. of Canada Ltd.	
Mann & Cook	399
Marx, J. & Co.	65
T. McAvity & Sons, Ltd.	417
Meincke, G. A. & Co.	62
Montreal Locomotive Works, Ltd.	63
Moore & White Co.	15

N

Noble & Wood Machine Co.	61
Northern Crane Works, Ltd.	62
Norwood Engineering Co. of Can. Ltd	60

O

Ontario Pulp Wood Limits	56
Ottawa Car Mfg. Co., Ltd.	9

P

Panzl Digester Lining Co.	7
Paper Makers Chemical Co.	64
Parsons Trading Co.	18
Penmans, Limited	15
Pickles, W. F.	68
Prather, H. B.	64
Process Engineers, Ltd.	65
Provincial Paper Mills Co., Ltd.	59
Pullan, E.	65
Pulp & Paper Trading Co.	62

R

Relf, Darwen & Pearce	416
Rice, Barton & Fales Machine & Iron Co.	16
Riordon Pulp & Paper Co., Ltd.	66
Rolland Paper Co., Ltd.	66
Rushworth, Wm. A.	8

S

Sadler and Haworth	400
Sandy Hill Iron & Brass Works	17
Schlick, Leo.	64
Sewall, Jas. W.	65
Scott, Ernest & Co.	
Sessenwein Bros.	65
Sherbrooke Machinery Co., Ltd.	5
Smart-Turner Machine Co.	68
Spielmann Agencies	417
Standcliffe Estates Co., Ltd.	68
Stebbins Engineering & Mfg. Co.	64

T

Taylor, J. A.	
Ticonderoga Machine Works	10

U

Union Screen Plate Co. of Canada, Ltd.	62
Union Sulphur Co.	18

V

Vera Chemical Co. of Canada, Ltd.	6
Voith, J. M.	12

W

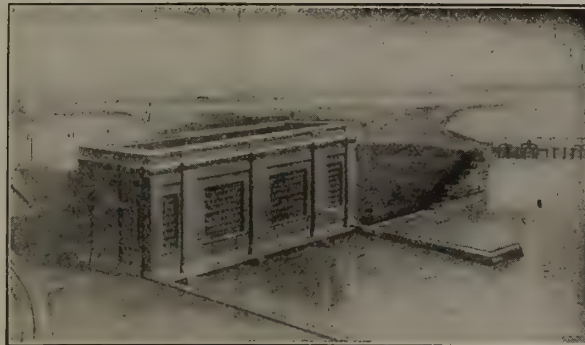
Wallace, Jos. H. & Co.	64
Walmsley, Charles & Co., Ltd.	4
Waterous Engine Works Co., Ltd.	8
Westbye, P. P.	11
Wilson-Peterson Co.	62



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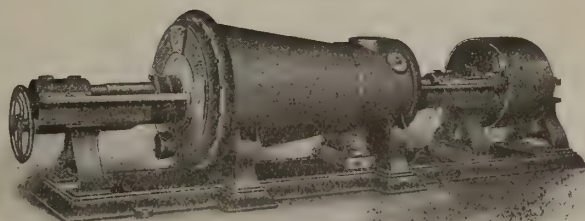
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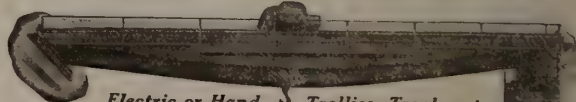
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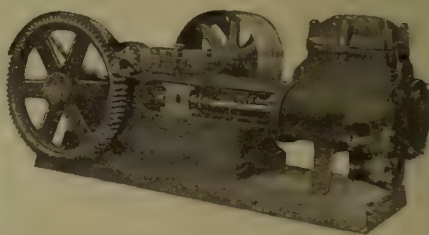


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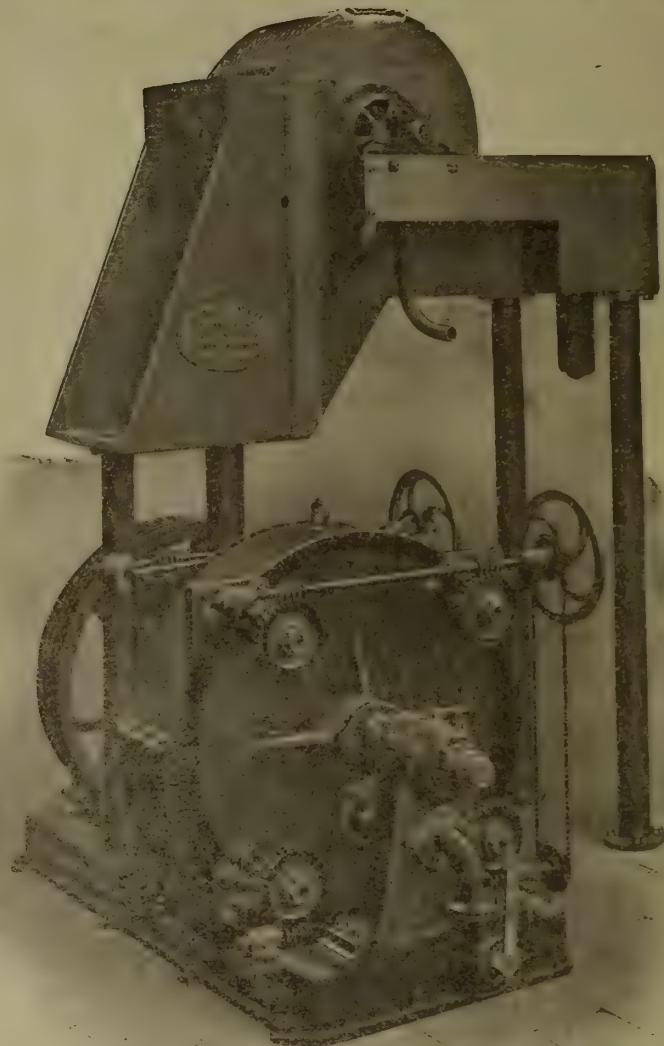
MARKETS

INDEX TO ADVERTISEMENTS, PAGE 58

MILL PRODUCTS, PAGE 53

BUYERS' DIRECTORY, PAGE 51

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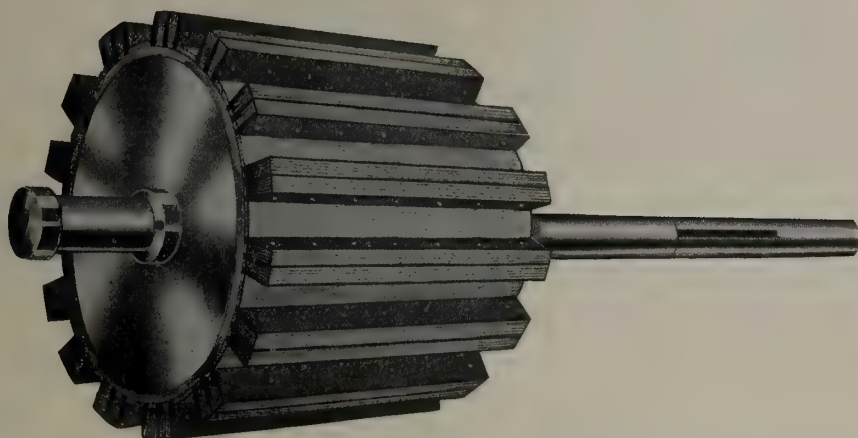
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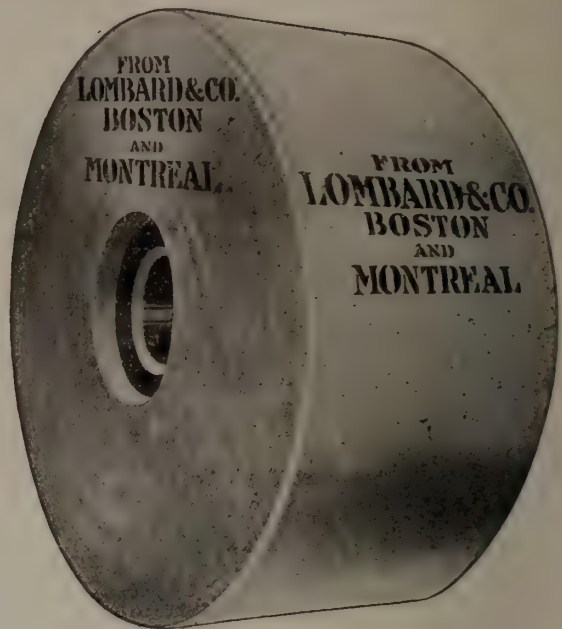
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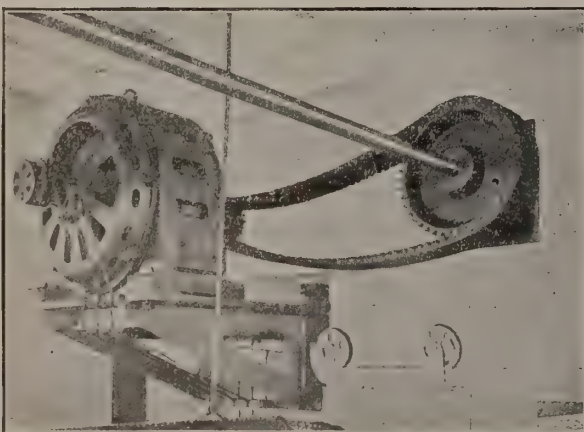


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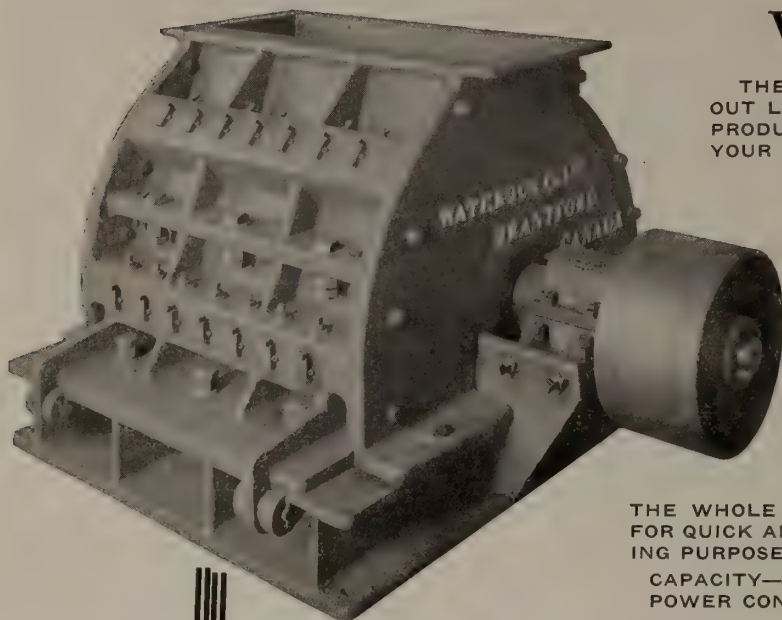
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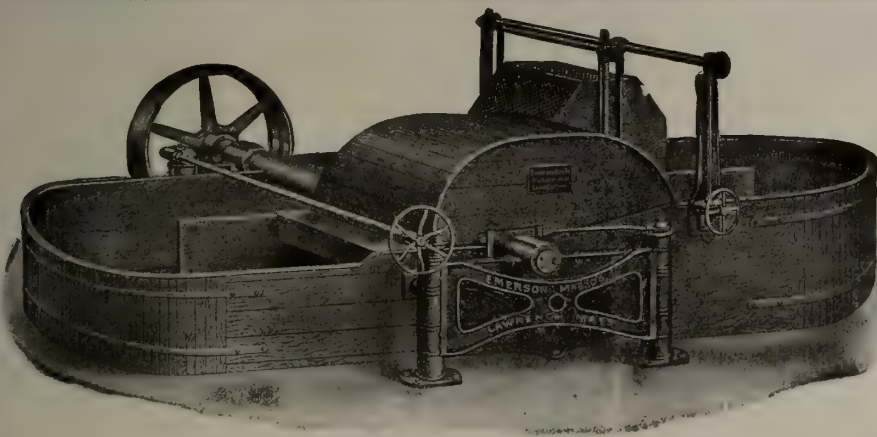
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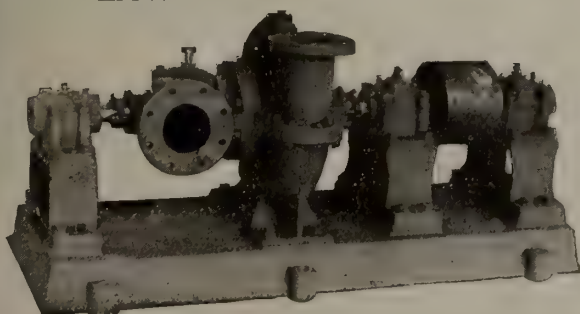
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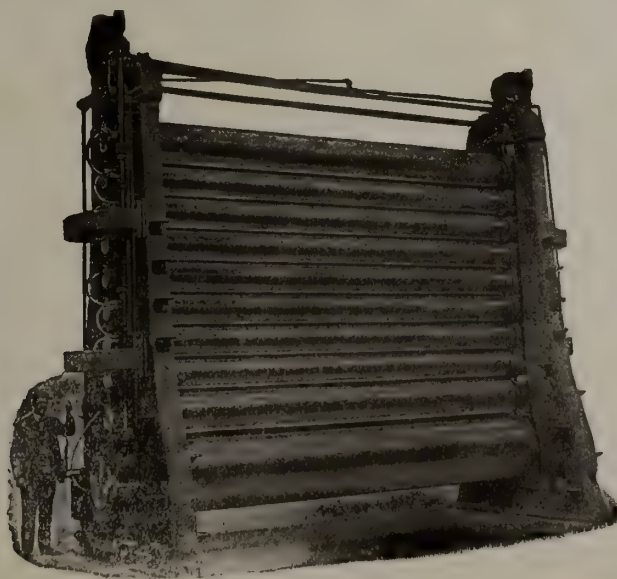
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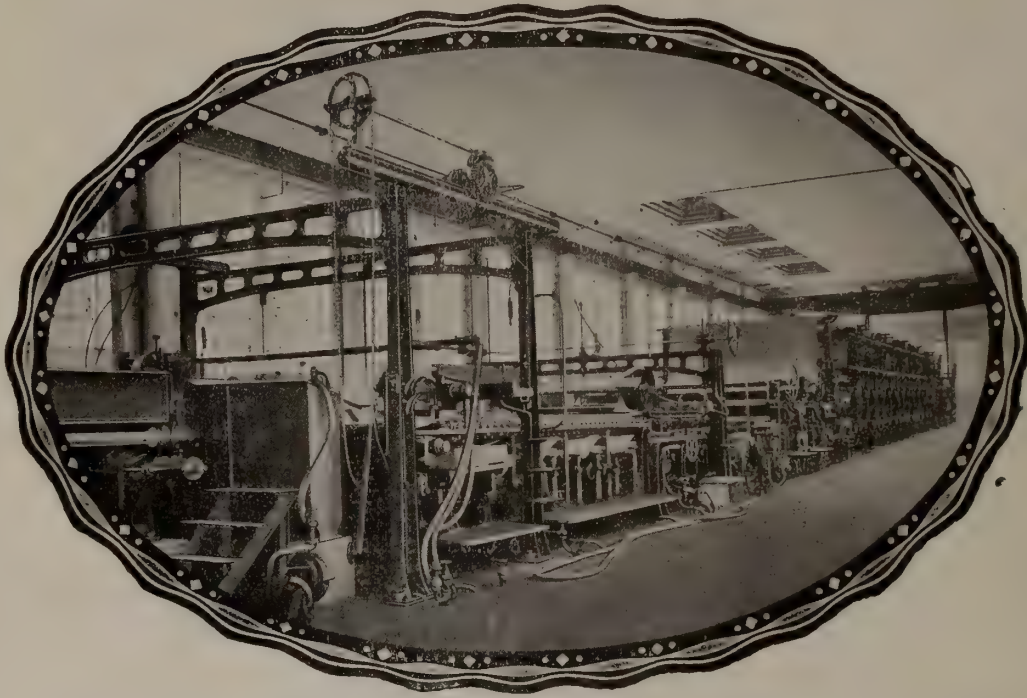


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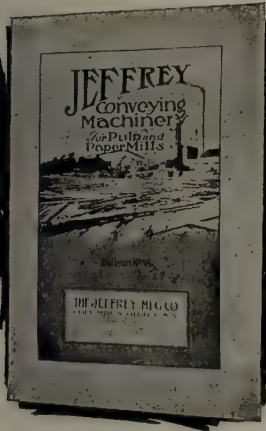
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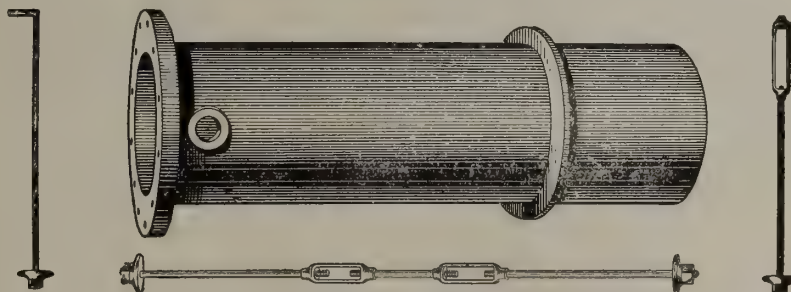
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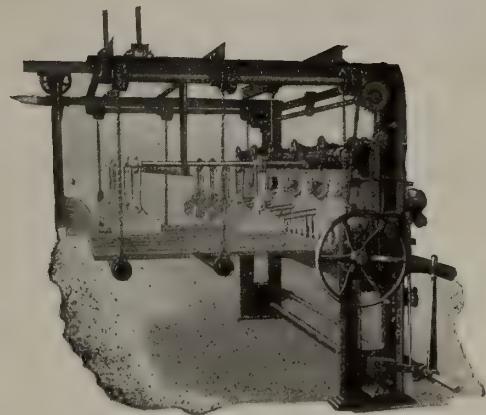
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Name of mill

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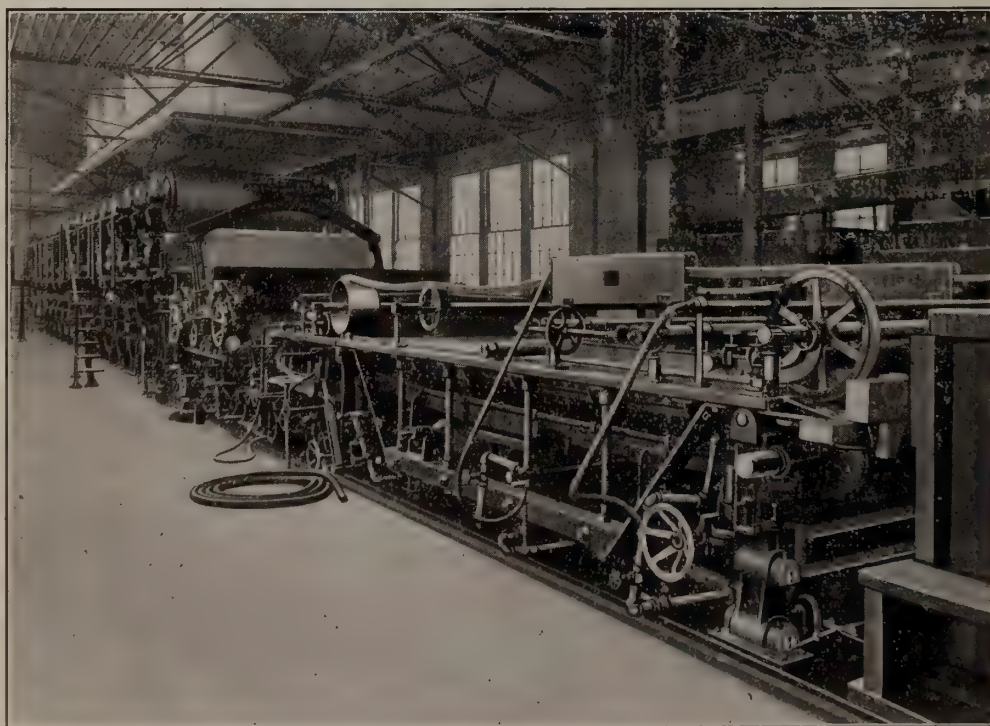
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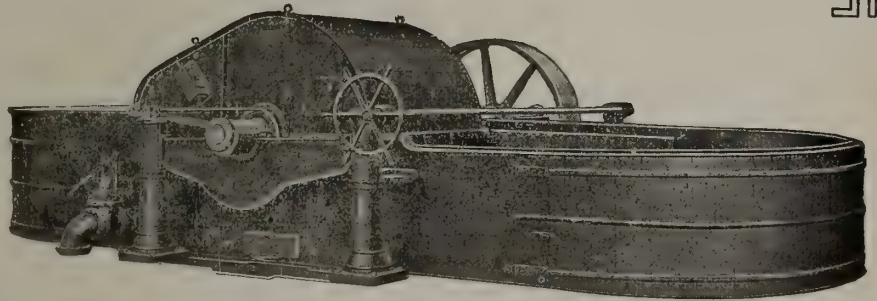
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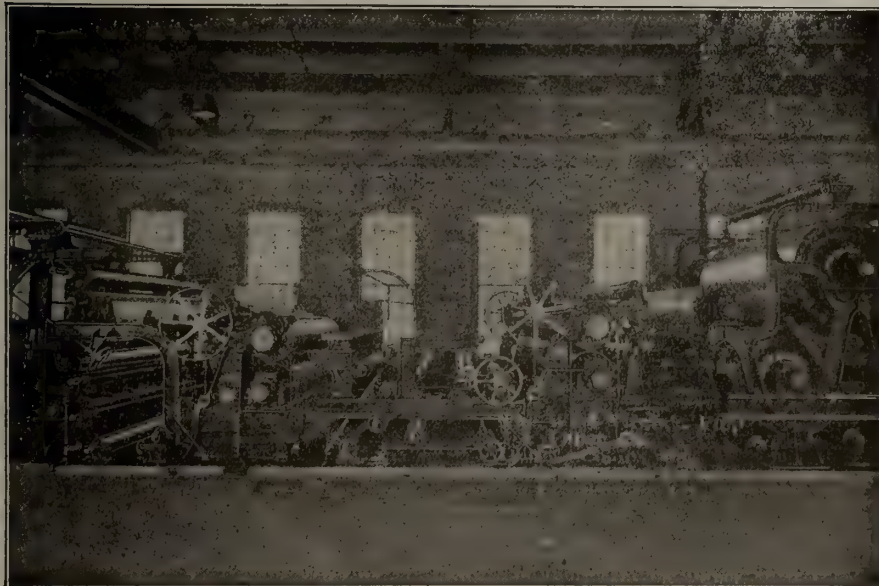
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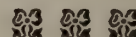
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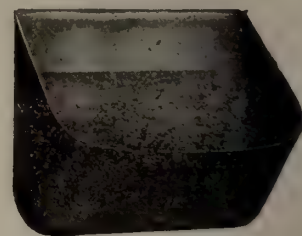
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MONTREAL, DECEMBER 15, 1916

No. 24

Evidences of Prosperity

Canadian pulp and paper companies are coming into their own! After years of constructive work and waiting—but not of the “watchful” kind—our paper companies are reaping a well-deserved harvest.

In the past six months the common stock of Canadian pulp and paper companies, with a total par value of \$12,000,000, has entered the dividend paying class, while another \$12,000,000 of common stock, that of the Wayagamack and Brompton, is expected to join the dividend paying class early in the new year. The companies which have made initial dividend payments in the last half year were Riordon, Price Brothers and Provincial Paper. In the matter of clearing up accumulated dividends on the preferred the Canada Paper Company wiped off arrears of 30 per cent a few months ago, while the Howard Smith Co. has paid off 19¼% and will pay another 1¾ per cent at the end of their fiscal year. Abitibi has also paid off a portion of the outstanding dividends on its preferred.

These are only a few of the indications that the industry is on a sound basis. Canada is now exporting pulp and paper to the value of \$36,000,000 per annum, and conservative estimates go to show that during the year 1917 we will export at least a million dollars a week of pulp and paper, making our paper exports lead all other kinds of manufactured goods.

The assertion is sometimes made that the prosperity of the paper industry is due to the war, but such is not the case. For several years the pulp and paper industry has been developing. Mills from south of the border have been dismantled and moved across, while new capital from the United States and Great Britain has sought investment north of the forty-ninth parallel.

It is undoubtedly true that the war gave a stimulus to the industry as it shut off the British and United States imports of European fibre and these big consuming countries were forced to turn to Canada for their supplies.

The Pulp and Paper Magazine, however, has always claimed that Canada is destined to be the pulp and paper manufacturing centre of the North American continent, and eventually of the world. We have the last available pulp wood supply on the continent, have abundant water power, have as competent paper makers and as good a supply of labor as is to be found anywhere, while our shipping facilities, our nearness to the United States markets, and our connection as part of the British Empire, with all that may mean in the way of preferential tariff undoubtedly spells prosperity for the pulp and paper industry.

The Christmas Tree Trade

It is most unfortunate from a conservation standpoint that Christmas requires the use of tens and tens of thousands of spruce and other evergreen trees. These trees are cut down and shipped out by the car load; the annual export making very serious inroads on the future timber supply of the nation.

Among cattle men and farmers a movement has been started to put a stop to the killing of calves for veal. It is pointed out that the present very serious shortage in dairy and beef cattle is largely due to the pernicious habit of slaughtering young calves. If a calf is allowed to grow to maturity it plays a very much larger part in the economic life of the nation than if slaughtered shortly after birth.

In much the same way the cutting down of young

spruce trees affects our supply of pulp wood. A man gets but a few cents for a Christmas tree yet it is probably cut from a hillside which is incapable of growing anything else but trees. The cutter never thinks of replacing the destroyed tree with a seedling and so the way is paved for the land to become a barren waste. If the tree is left to mature and then cut and used to make paper the return is much larger and with our growing appreciation of the value of reforestation the probabilities are that a seedling or two would be planted to take the place of the tree cut down.

From the standpoint of the papermen the Christmas tree trade is most hurtful and we would like to see the Pulp and Paper Association and the Commission of Conservation take some action in the matter.

Above all others the cry of "Woodman spare that tree" goes out to the man who cuts down and ships out car loads of young spruce trees.

German Peace Proposals

The outstanding feature of the week was the peace proposals made by Dr. Bethmann-Hollweg, the German Chancellor. His proposals savor almost of the ludicrous in view of what Germany is now doing and what she has done during the past two and a half years.

For over forty years Germany was preparing for this conflict, and for the most part caught the rest of Europe unprepared. Now when the allied nations are attaining something like their maximum strength and Germany is on the down grade she calls for peace. A peace concluded on the terms Germany would make would be a victory for the Teutonic powers, and would simply mean that the world would continue to live under the shadow of Prussian militarism, and would have to fight the war all over again in another ten or fifteen years. We want peace as much as anybody can want it, but we don't believe in an inconclusive peace after we have given our men and our money in the prodigal way we have done since the outbreak of hostilities.

The world will eagerly await the answer to be given by Lloyd George and the other allied leaders. Unless all our previous announcements on peace go for naught the allies will scornfully reject the German peace proposals. Ex-Premier Asquith has stated that "we will never sheath the sword until Prussian militarism has been crushed." Lloyd George has stated "the fight would be to a finish, a knock-out blow." The French Premier and the Russian leader of the Duma have made the same statements. The call for peace on the part of Germany is a sign of growing weakness, but we must not meekly give way the first time the Kaiser calls "Kamerad." He and his war lords must be beaten to their knees.

JOURNALIST TURNS SALESMAN.

Elsewhere in this issue is an announcement stating that Bates and Innes, Felt Makers of Carleton Place, Ont., have opened an office in the Coristine Bldg., Montreal, and that Mr. E. S. Bates will have charge of the same. Mr. Bates is already well known to a great many pulp and paper men throughout Canada, and we predict that before long he will be known to every live paper maker in the Dominion. Mr. Bates is an erstwhile journalist, but either because of having been born at Lanark, a Scotch settlement, or through long association with the Scotch he early in life realized that there was a shortage of bawbees in the journalistic field and so has decided to make a fortune as a commission broker. Mr. Bates was born in Lanark some twenty-seven years ago, educated in that burg, and then took the commercial course at McGill. For the past four or five years he has been editor of the Canadian Textile Journal and has been a frequent contributor to the columns of the Pulp and Paper Magazine, as well as American paper journals. "Stan's" sunny smile and good salesmanship ought to make a combination that is hard to beat. The Pulp and Paper Magazine wishes him every success in his new venture.

HOWARD SMITH CLEANS UP DEFERRED DIVIDENDS.

Further evidence of the prosperity of Canadian pulp and paper companies is shown by the fact that the Howard Smith Paper Company has paid up all its deferred dividends amounting to 19 1-4 per cent.

After declaring a dividend of 7 per cent only a couple of weeks ago on account of back deferred dividends, directors of the Howard Smith Paper Company yesterday made an additional distribution of 12 1-4 per cent on the preferred stock, payable December 20th. Seven per cent of this declaration is applicable to the arrears for the year 1915 and 5 1-4 per cent to the arrears of the current year to date.

The shares of the Howard Smith Company are to be admitted to the unlisted department of the Montreal Stock Exchange.

THE BEAVER BOARD COMPANIES CREATE NEW SUBSIDIARY.

The Beaver Board Timber Company, Limited, has just been incorporated with a Dominion Charter to take over the interests of the Smith-Fassett Lumber Company at Charlton, located on the Blanch River adjacent to Long and Kimagami Lakes in Upper Ontario. The property consists of saw mill, yards, trackage, stables, warehouses, etc., together with their timber limits, camps, boats, logging and driving equipment. Additional timber limits have been secured adjacent to their property and negotiations are under way for further additions.

This move on the part of the Beaver Board Companies is for the purpose of further insuring their supply of spruce wood for the operation of their large plant at Thorold, the capacity of which has been recently increased.

The president of the new subsidiary is: W. F. MacGlashan, and the general manager is J. B. O'Brien.

Pulpwood Measurements and Some Factors Involved in Chipping and Baling Pulpwood

By O. F. BRYANT.

The problem of pulpwood supply is one which is probably less acutely felt in Canada than in other countries at the present time but the Canadian supply is not unlimited and many of our pulp manufacturers are beginning by their policies of reforestation to recognize this fact. Many mills are still favorably located as regards their wood supplies but some are beginning to feel the pinch of increasing wood costs and if the present methods of cutting are persisted in all will sooner or later be hard put to it to find adequate supplies at reasonable prices.

When the supply of timber within reasonable hauling distance of a mill shows signs of becoming exhausted there are three possible lines of procedure,—

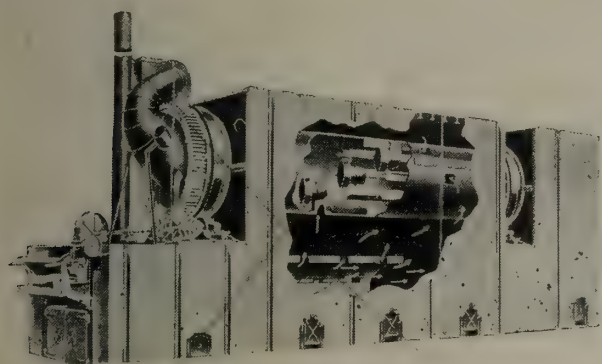


Fig. 1.—The Cummer Dryer With Side Wall Cut Away to Show Path of Hot Gases Through Dryer.

First, reforestation, thus maintaining the supply near at hand; Second, securing the timber from sources remote from the mill and, third utilizing waste wood such as saw mill waste. The method of reforestation is by far the most important of the three but it is with the obtaining of wood from distant sources and the utilization of waste that we will deal at this time.

In many parts of the Dominion there are large tracts of pulpwood which have never been considered as available sources of supply for pulp mills. These tracts are not necessarily inaccessible, in fact some of them are situated directly on railroads but their distance from the markets is so great that high freight rates make their successful exploitation impossible. Sooner or later it will be necessary to depend to some extent on such tracts for our supplies of pulp wood and for this reason the problem of reducing freight costs must be solved. A similar problem in connection with shipping pulp was brought to a successful conclusion years ago by eliminating the water from the pulp, thus reducing the weight and this seems to be the most reasonable method of treating the pulpwood problem. Wood as cut or after driving contains a large amount of water, often as high as a pound of water for every pound of wood, and the main problem consists in devising a method of driving off this water which will not

be so costly as to overcome any advantages of lowered freight costs.

Two methods of eliminating the water may be resorted to, namely natural seasoning and artificial drying. In the case of natural seasoning the wood may be stacked in the woods with or without the bark and allowed to stand until it comes to an air dry condition. There are, however, several reasons for not adopting this procedure. The wood requires from one to one and a half years to thoroughly season and during this time considerable capital is tied up; at the same time there is always the danger of loss by fire. In addition to this the timber is more than likely to become fungus infected and a very appreciable loss through deterioration on this account may be entailed. For these and other reasons the seasoning of the wood at or near the lumbering operations is not an altogether attractive proposition.

Artificial drying requires that the wood receive some preliminary treatment to reduce it to small dimensions before an attempt is made to drive off the moisture. Drying the wood in the form of a log or bolt is out of the question since owing to the low conductivity of the wood the outside of the log will be dried while the inside still contains considerable moisture. If the whole of the moisture is to be removed in a reasonable length of time the fuel used will more than offset any advan-

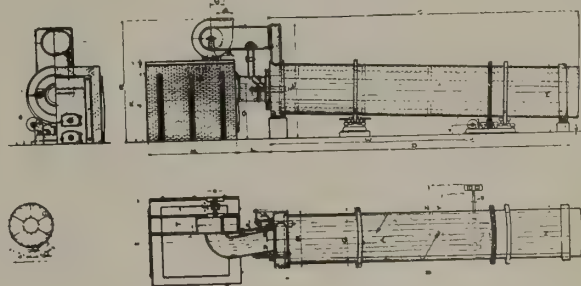


Fig. 2.—Ruggles-Coles Class "B" Dryer.

tages derived from drying. When, however, the wood is reduced to comparatively small dimensions the problem is greatly simplified. Such wood, of course, is unsuitable for groundwood but can be reduced to a form that would be exactly that required by the chemical processes. The most reasonable procedure is to bark the wood, chip it as is done in ordinary mill practice and dry the chips in a suitable drying apparatus. The chips offering as they do an enormously large surface as compared with the log will dry out quickly and with a comparatively low fuel consumption.

After drying the chips is it necessary to put them in some suitable form for shipping. The ordinary 60,000 pounds freight car with a loading capacity of about 2,448 cu. ft. cannot be loaded to capacity with loose chips, in fact it will hold only about 19,000 pounds of chips in this form, whereas the minimum loading

weight is 40,000 pounds. For this reason it is necessary to find some method for compressing the chips so that they occupy a smaller volume. By using a baling press and compressing the chips to about 50 per cent. of their original volume approximately 38,000 pounds of chips can be loaded into the car. In this way a 60,000 pound car can be loaded up with chips to practically its minimum capacity.

In dealing with sawmill waste we are practically confined to slabs and edgings as our material for pulpwood. The utilization of these materials for the production of pulp is by no means a new idea and has been carried out successfully both in sulphite and sulphate mills for several years. This is particularly true of mills which are located near or run in conjunction with saw mills. The necessity of having the wood thoroughly clean in the case of the sulphite process makes the use of slabs a less attractive proposition than with the sulphate process in which the wood does not have to be so clean, but it is now claimed that barking drums are being made which handle slabs successfully and if this is the case their utilization by the sulphite process

tain that a pulp suitable for some of the cheaper grades of paper can be made.

The question of utilizing slabs from saw mills situated at some distance from pulp mills is more uncertain. The freight costs, costs of handling and cost of material itself makes the utilization of slabs a very difficult matter with which to deal. With the idea that the same procedure which apparently solves the problem of shipping pulpwood from considerable distances, that is, chipping, drying and baling, might be successfully applied to sawmill waste some time was given to the study of the problem. It was thought that plants could be located at sawmills by which the slabs could be barked and prepared for shipment to the pulp mills but further investigation showed this proposition is not as feasible as at first appeared. Taking as an example a mill sawing 20,000,000 board feet per year it was found that the output of slabs was about 8,000 cords. When the cost of a chipping, drying and baling plant is considered in conjunction with the fact that nearly four cords of slabs would be required to produce a ton of pulp it will be seen that the amount of

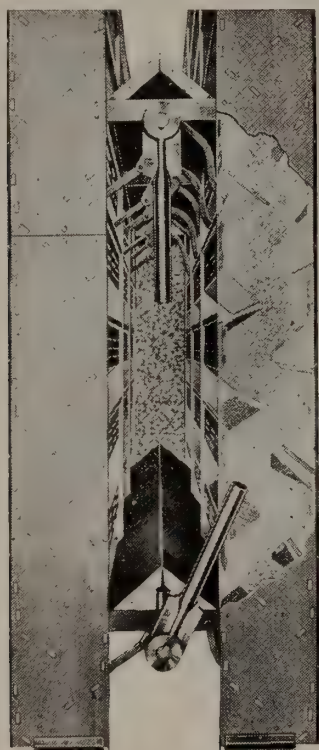


Fig. 3.—Hess Dryer Ruck Portion of End Wall Cut Away to Show Position of Shelves and Distribution of Material to be Dried.



Fig. 4.—Rucks of Hess Dryer Showing Steel Uprights and Shelves.

will probably increase. The chipping of slabs is also more difficult than in the case of round wood and less uniform chips are obtained but such experiments as we have carried out indicate that a fairly good grade of chips can be obtained and that the yield of chips from a cord of slabs and from a cord of round wood are in very nearly the same proportion to each other as the solid contents of the two cords.

It is safe to say that where a pulp mill is situated near a saw mill the utilization of slabs is feasible and especially so in the case of a sulphate mill. Owing to the difficulty of removing the bark from slabs and particularly the brown inner bark, the cambium, it is doubtful if a clean, high grade pulp can be produced from this material by the sulphite process but it is cer-

slabs produced yearly is too small to warrant a very great expenditure. It would also be necessary to run the plant about two hundred days, the average sawing time of a mill, leaving it idle the rest of the year or else to use a smaller plant and run it the year round piling the slabs in the yard until they could be worked up. In the latter case the cost of handling and rehandling the slabs being considerably higher than for round wood would be prohibitive.

With pulpwood at its present prices it appears that only mills which are located at or near sawmills can successfully use sawmill waste. The shipping of such waste either in the form of slabs or chips to distant points seems to be out of the question.

The experimental work on the chipping and baling

of pulpwood has been carried out at the Forest Products Laboratories of Canada in conjunction with the Canada and Gulf Terminal Railway. The idea of barking, chipping, drying and baling of pulpwood at or within river driving distance of the lumber operation originated entirely with the Canada and Gulf Terminal Railway. Early in their work they realized the necessity of obtaining data as to weight per cord of rough and peeled wood, both green and dry, the shrinkage in volume and weight on peeling, the yield of chips per cord of peeled wood, etc. With this in view they arranged with the Forest Products Laboratories of Canada to carry out a series of tests to obtain these data.

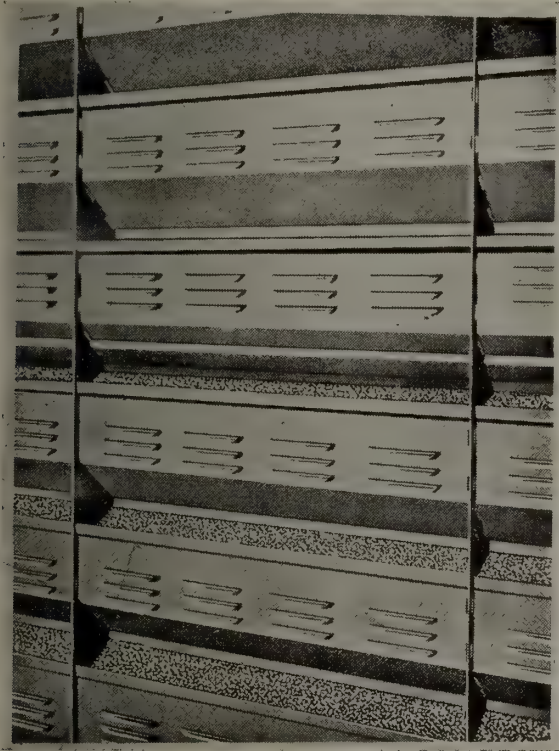


Fig. 5.—Side View of Rack of Hess Dryer, Showing Material Lying in Position for Drying.

Two cords of pulpwood were used for the work the wood being an average of that cut in the vicinity of Matane, Que. The measurements were made by piling the wood in a rack of the standard cord dimensions 4-ft. x 4-ft. x 8-ft. The length and weight of each stick was taken and the diameters of the large and small end determined with a caliper and a tape. From these data the solid content and weight of a cord of rough wood were determined. The wood was then carefully peeled and all projections such as stubs of branches were removed. The bark from the wood was weighed and the moisture determined in order to find the loss of weight on barking. The diameters of each stick were again carefully determined and by means of these data barking loss was checked and the solid content of peeled wood was obtained. The peeled sticks were then repiled in the rack and from the overall dimensions the volume shrinkage on barking was found. A sufficient number of peeled sticks, the diameters, weight and length of which had been pre-

viously determined, were added to make up to a full cord and from this the solid content and weight of a peeled cord were determined. All the above measurements were carried out on two separate cords of wood.

In order to establish more accurately the solid content of a cord of wood the volume of the wood in one of the cords was determined by immersion. Each stick was immersed in a tank of water, the water displaced by the stick was weighed and the volume of the stick calculated.

The other cord of wood was then chipped with a 47-inch Carthage Chipper using two knives on the disc and the chips thus obtained screened. The screening was done with a small shaker screen equipped with a one inch and a one quarter inch screen. In the absence of a crusher or re-chipper chips of the proper length in the direction of the fibre length but too wide to pass through the one inch screen were broken up by hand, all other chips not passing through the one inch screen were considered as large chips. The chips passing through the one inch but not through the one quarter inch screen were called good chips while everything passing through the one quarter inch screen was considered as sawdust. The weights of the three grades of chips were determined, moisture tests were run and from these data the yield of chips per cord of peeled

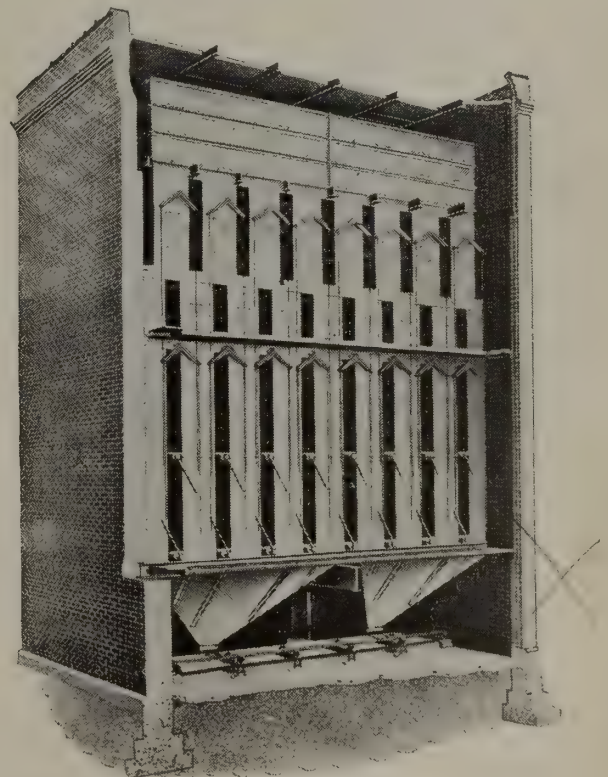


Fig. 6.—Hess Dryer With Ground Wood Removed.

wood was obtained. The volume of good chips was determined by packing the chips lightly in a box whose cubical content was eighth cubic feet.

A similar series of test was run on a cord of slabs to determine the weight, solid content and yield of chips.

A portion of the data obtained from these experiments is given in Table I:

Pulpwood Measurements.—Table I.

	Rough cord.	Peeled cord.	Peeled slabs.
Spruce, per cent.	18.8	18.9	.....
Balsam, per cent.	81.2	81.1	.....
Sticks per cord, No.	95	107	.....
Solid contents by tape, cu. ft.	102.76	102.2	.....
Solid contents by immersion, cu. ft.	97.05	70.3	.....
Wet weight, lbs.	4,620	4,492	3,253
Bone dry weight, lbs.	2,232	2,170	1,617
Bone dry weight bark, lbs.	240	.....	.....
Bone dry weight peeled wood, lbs.	1,951	2,170	1,617
Solid contents peeled wood by Im- mersion, cu. ft.	86.1	97.05	70.3
Volume loss on barking, per cent.	11.46	.....	.....
Bone dry weight good chips, lbs.	1,731	1,941	1,377
Volume good chips, cu. ft.	269	302	215

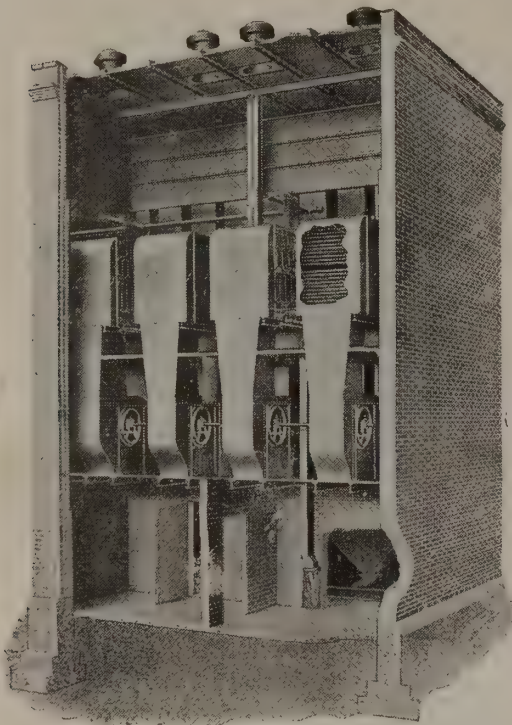


Fig. 5.—Hess Dryer With Rear Wall Removed.

The drying of the chips is a problem which deserves considerable attention. It is probably best to dry them to a moisture content of about 15 per cent, calculated on the wet weight of the wood, as this is somewhat below the moisture content of air dry wood. In this condition the chips after baling will have a tendency to take up moisture and swell thereby tightening the bale, whereas with a higher moisture content, say 30 per cent., the chip will loose moisture and shrink causing the bale to loosen and fall apart. It is not advisable to dry the chips much below 15% moisture content as it becomes difficult to drive off the moisture below this point.

There are several dryers which may be used for drying chips three of which will be briefly described here.

"The Cummer Dryer," Fig. 1, consists of a cylinder of heavy steel plate fitted with angle irons which serve as lifting flights for agitating the chips. The whole is enclosed in brickwork with a fire box at the front. The hot gases are drawn through the drying

apparatus in the direction indicated by the arrows by means of a fan. About 75 per cent. of the hot air and gases enter the cylinder through the hooded openings shown in the figure, the balance entering at the rear of the cylinder. By this arrangement the hottest gases come in contact with the wet, cold material as it enters the cylinder while by means of sliding doors in the dryer setting cold air can be admitted to reduce the temperature of the gases at the rear end of the cylinder. The lowest temperature and least circulation is at the rear end of the cylinder where the material is dryest. It is claimed that the dryer is very economical evaporating at least ten pounds of moisture per pound of slack bituminous coal.

Another form of dryer which might be used for this work is the Ruggles-Coles Class "B" Dryer which is shown in Fig. 2. This consists of a long hollow rotating cylinder from 21 to 36 feet in length and from 4 to 7 feet in diameter to which a furnace for supplying hot gases is connected. The furnace gases pass down through a central pipe running through the cylinder, enter a header at the rear and pass back through tubes placed on the inner shell of the cylinder and are finally drawn out by means of an exhaust fan. The chips are fed into the space between the central pipe and the tubes and are delivered in a dry condition through openings in the end of the cylinder farthest from the furnace. The drying chamber is connected to the fan by means of a small flue with a damper so that

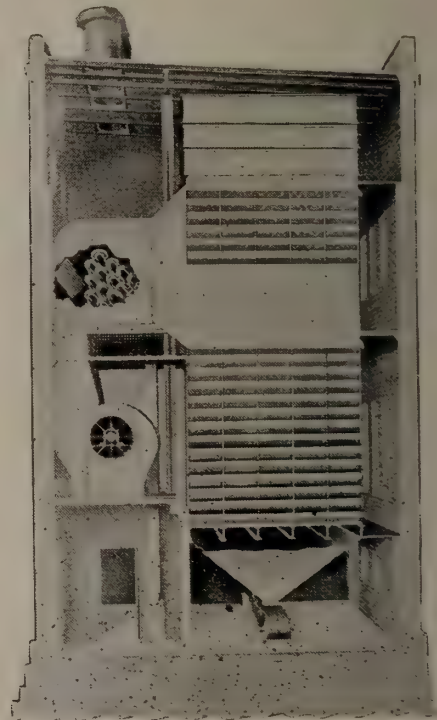
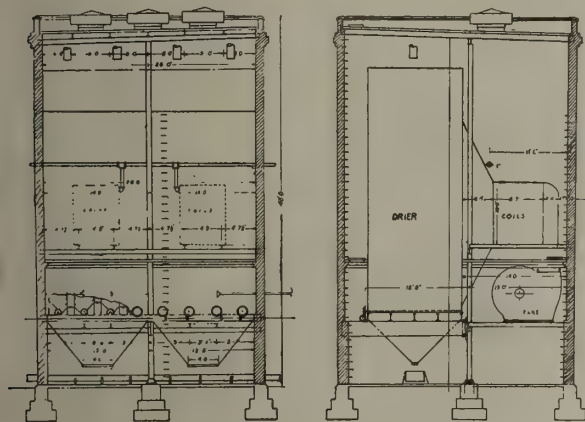


Fig. 4.—Hess Dryer With Side Wall Removed.

varying amounts of air may be drawn through the chips to carry off the moisture. The chips in passing through the cylinder are lifted up by the tubes which act as lifting flights and spilled out over the central pipe to the bottom of the cylinder thus increasing the efficiency of drying. These dryers will give an efficiency of about 50 per cent. of the fuel value of the coal.

A dryer of quite different construction which has been drying grain successfully for several years and a modification of which is now being used by the British Columbia Sulphite Fibre Co., for drying chips is manufactured by the Hess Warming and Ventilating Company of Chicago. This dryer consists of a series of racks made up of shelves attached to vertical steel plates. The shelves are staggered opposite each other in such a way that the chips descend through the racks in a zig-zag course and are finally discharged into a hopper and from the hopper to a conveyor belt. Unfortunately this company could not furnish cuts and drawings of their drying apparatus but they did send a blueprint of an installed chip dryer and cuts of their grain dryers which are very similar to their chip dryers. Figure 2 is a sectional end view of the grain racks showing the staggered shelves and the general course



Hess Pneumatic Drier for Chips

Fig. 9.—Hess Pneumatic Drier For Chips.

of the chips through the rack. The levers in the foreground for filling and dumping the racks are absent in the chip dryer the chips being fed slowly through the racks by means of mechanical feeders at the bottom. The parts of the dryer which hold the chips are so constructed that they cannot choke as all the openings and spaces in which the chips are held increase in size from top to bottom. The shelves in the chip dryer are placed at a different angle than those shown in Fig. 2 so as to insure the easy flow of the chips through the racks. Another view of the racks is shown in Fig. 3. It will be noted that the layers of chips lying on the shelves are well exposed to the air. The spaces between the racks are of such dimension that they will readily admit a man, hence the distribution and air pressure are very uniform. Fig. 5, a side view of the rack, shows the $\frac{1}{4}$ -inch openings with overhanging edges for the admission of air through the body of the shelves. Figures 6, 7 and 8 show a dryer installation with the front, side and rear wall respectively, removed. These show very clearly the position of the racks, hoppers, fans, coils and conveyors and give good idea of the type of build required for the apparatus. In a dryer designed for chips the fans would deliver hot air at a point nearer the bottom of the racks than is shown in these cuts. A drawing of the housing of a chip dryer is shown in Figure 9. This drawing gives dimensions of building, etc., and is of an actual dryer installed for drying chips.

A dryer of sufficient capacity to dry 2,500 cu. ft. of chips per hour from a moisture content of 55 per cent to one of 15 per cent. would require 50 horsepower to operate the fans and feeders and 300 boiler horsepower to supply steam for drying the chips.

While the exact details of the balers required for baling chips have not been sufficiently worked out to warrant a description at this time experiments with existing balers have shown that the baling of chips is an entirely feasible proposition. With a comparatively light baler and with a pressure of about 115 lbs. per square inch chips have been compressed to 50 per cent of their original volume.

The dimensions of the bales will be 29-in. x 33-in. x 28-in. and they will be bound top and bottom by three wooden slats and tied by three wire bands. A photograph of a bale is shown in Fig. 10.

It has been suggested that baling might have a tendency to close up the chips and render penetration by the cooking liquor more difficult than with ordinary chips and the criticism has also been offered that the chips might be considerably broken up in the baling process. Chips from some of the bales made have been examined but in no case could a tendency toward closing up or breaking up be discovered.

There are many advantages to be derived from the use of dry baled chips. Purchasing by weight instead of volume and buying chips of a known moisture content will ensure the buyer of getting a known amount of wood instead of a very variable amount as where



Fig. 10.—Bale of Chips Showing Method of Binding and Tying.

buying by the cord in which case both the solid content and moisture content vary. Freight charges on a lot of more or less useless material such as bark and sawdust which at best can only be used as fuel will be avoided. There will be very little danger of dry rot, as is the case with wood stored in yards, for even though the chips have to be stored the low moisture content will greatly reduce the danger of fungus infection.

Several advantages are claimed for the use of dry chips in the manufacturing process. There is a decrease in volume when chips are dried and this allows a greater amount of chips to be charged into the digester than with wet chips resulting in an increased yield of pulp per digester. Owing to the fact that

less water is present to dilute the cooking liquor a saving sulphur and coal is made and the almost constant amount of moisture in the chips greatly reduces the troubles experienced by the acid plant in keeping the cooking liquor at a constant strength.

Questions have arisen as to the effect the drying of chips to a moisture content of 15 per cent. would have on the pulp produced. Sapwood carries more moisture than heartwood and is also more easily penetrated than the latter and it may be that this moisture thus serves to equalize the action of the cooking liquor on sapwood and heartwood. Destroying the moisture balance by drying the wood might result in an over cooked sapwood or an under cooked heartwood. The yield and grade of pulp from sapwood as compared to heartwood, the penetration of the cooking liquor and the



O. F. Bryant Whose Interesting Paper Read at the Recent Meeting of the Technical Section Appears in This Issue.

best cooking conditions for producing pulp from sapwood are problems of particular interest particularly in the utilization of slabs for the manufacture of pulp. Problems such as these can only be solved by exhaustive experiments and work is now being carried out at the Forest Products Laboratories of Canada which it is hoped will bring us to a clearer understanding of these matters.

In conclusion I wish to acknowledge the hearty co-operation of Mr. E. S. Holloway of the Canada and Gulf Terminal Railway and the valuable assistance of my associates at the Forest Products Laboratories of Canada in carrying out the experimental work herein outlined.

TO USE WASTE FROM SAW MILLS.

Discoveries recently made at the United States government forest laboratory in use of former waste material from saw mills in paper making have proved so important that price of rags dropped from \$72 a ton to \$35. In several mills rags are being supplanted to extent of 30 per cent by waste bark, without diminishing quality of finished product. Recent figures show there are about 700,000 tons of hemlock bark produced each year. After being used for tanning bark was sold for fuel with value of 60 cents a ton.

WHO'S WHO IN CANADIAN INDUSTRY.

I. H. WELDON: Twenty-Four Years a Pulp and Paper Man.

Sixty and seventy years ago the pioneer settlers of old Ontario — the sturdy Scottish and Irish stock which braved the dangers of the Atlantic in sailing vessels to find the shores of Canada — plunged into a wilderness of forest, and after a generation of hardship and suffering, laid the foundations of the fine agricultural counties of the present day. Amongst those hardy husbandmen of Ontario's early days were the Weldons, who migrated from Antrim county, Ireland, and found themselves a home in that portion of western Ontario now described as the county of Oxford. One of that family lived to the remarkable age of 104 years, and he was the grandfather of Mr. I. H. Weldon, the subject of this sketch, who, at forty-one years of age, gives evidence of possessing all the vitality of his venerable ancestor.

A Farmer of Pulpwood.

Just as I. H. Weldon's late forbears penetrated the forests of Oxford county over half a century ago, he has turned his steps toward the vast expanses of pine in Ontario's hinterland, and to-day is engaged in the development of a new kind of farming, namely, that of



I. H. Weldon, President Provincial Paper Mills.

pulpwood. President of a trio of companies which control one of the largest portions of the manufacture of book, bond, writing, coated and tissue papers in Canada. I. H. Weldon is a fair example of the success which has attended the efforts of many of the sons and grandsons of the first generation of Ontario's rugged pioneers. Agriculture probably has lost in such cases what the manufacturing industries have gained, but, all in all, the deal has been a fair one so far as the whole country has been concerned.

Started to Study Medicine.

I. H. Weldon has been in the paper business since he was seventeen years old.

He came to Toronto from the farm with the idea of studying medicine, but after his first year at college he decided to spend the summer months in the Toronto

office of the E. B. Eddy Company, where his older brother was manager. That was the beginning of I. H. Weldon as a paper man. His first job was that of office boy at the munificent salary of one dollar and fifty cents per week. He never returned to the study of medicine. After spending eight years with the Eddy firm he joined the Laurentide Paper Company at Grand Mere, Quebec, as manager of sales for Canada and the United States. With four years' experience in that position, he next crossed the line to go with the Burgess Sulphite Company of Boston. This third job took the form of a post-graduate course in the business of pulp and paper, and in 1909 Mr. Weldon returned to Canada to organize the St. Lawrence Paper Mills Company. He first purchased mills at Mille Roches, Ont., and later acquired other mills at Thorold and Georgetown. The St. Lawrence Paper Mills Co., Limited, has since become the Provincial Paper Mills Company, Limited, of which Mr. Weldon is the President. He is also on the board of the Interlake Tissue Mills at Merritton, where one of the largest tissue-making plants in Canada is located.

Efficient, But Humane.

Organization and efficiency are the two watchwords which have guided I. H. Weldon along the road to success. In 1914 the Canadian Pulp & Paper Association sprang into existence, with eight members. The first President was Mr. Carl Riordon, and the first Vice-President was I. H. Weldon. In 1915, when Mr. Weldon became President, the association grew until it had forty-one members, representing ninety-three per cent of the total pulp and paper tonnage in Canada. But while emphasizing the value of scientific organization in the pulp and paper business as a whole, as well as in his own mills, Mr. Weldon's idea of efficiency has not been developed at the expense of humanitarianism. The fact is that the newspaperman who interviews the President of the Provincial Paper Mills just now will hear a deal more about the evening industrial classes for workmen which have just been started in Thorold, about the safety associations in connection with the Ontario pulp and paper makers, and about the Canadian Free Library for the Blind, on the board of which institution he is Chairman, than conditions affecting the pulpwood business. While a shrewd, practical mind watches trade, and profits by it, a generous and humane Irish heart does not forget the conditions under which men work in pulp and paper mills.

Canada's Future in Paper.

The future of Canada in the paper industry is unlimited, according to Mr. Weldon's view. "In ten years," he said to The Globe, "I venture to say that all the newsprint in America will be manufactured on this side of the line. We have in Canada unlimited quantities of wood and an abundance of water and water-power. This country owns 40 per cent of the world's supply of pulpwood, and yet we are producing only about five per cent of the world's paper. The United States has eighteen per cent of the world's pulpwood supply, and makes about forty-two per cent of the paper. There is only one conclusion to such a situation." The big development, Mr. Weldon thinks, will be in newsprint, which offers the greatest opportunity to Canada for expansion. The scene of development in the immediate future, he thinks, is bound to be in territory lying directly south and east of Hudson's Bay. Eastward from the Timiskaming country to

Labrador would seem to be the logical field for the pulpwood industry during the next twenty years.

Importance of Fire Protection.

Conservation of Canadian forests, which includes, in Mr. Weldon's opinion, a restriction of the exports of pulpwood, cannot be too greatly emphasized. A cord of pulpwood shipped across the line to a mill in the States does not begin to benefit Canada as much as if that cord of natural product had been kept here for purposes of manufacture. Protection against fire, however, was the main factor to-day in conservation. "We will gain more to-day by preserving our forests from fire than by reforestation," was the way Mr. Weldon expressed himself. "After all, fire is destroying more timber than the lumberman is taking out, and if efforts are concentrated on stopping this waste by an improved system of fire-ranging the country will be greatly benefited and enriched in the days to come." The scheme of the Dominion Forestry Department for fire protection in British Columbia and Alberta and other regions where Dominion forest reserves are located should be adopted generally in the forests of every Province.—From The Toronto Globe.

\$14,000,000 SAVING TO NATION SINCE 1910.

Henry S. Graves, chief forester of the United States, who was in Denver recently on an inspection trip of Colorado and Wyoming, called attention to the splendid work of the forest service in cutting down the former enormous losses caused by forest fires. In round figures, the reduction since 1910 amounts to \$14,000,000.

Mr. Graves drew comparisons by showing that in 1910 damage to timber on the public domain amounted to \$15,000,000, whereas in 1914, in the North-West alone, 7,000 forest fires threatened the destruction of timber valued at \$100,000,000, and the damages were held down to \$300,000, owing to the alertness and efficiency of the Federal Foresters.

U. S. NEWSPRINT BILL \$45 000,000 MORE.

Cost of newsprint in 1915 (a normal year) was about \$2.10 per 100 pounds delivered. The price announced by International Paper Co. for 1917 is equivalent to \$3.10 net f. o. b. mill. Increased cost to publishers in 1917 is figured by interests in position to know at \$25 to \$30 per ton, including freight, storage, etc.

About 15 per cent of the tonnage will not be affected by the new price, as publishers are either protected under contract or have their own mills. This would leave approximately 1,500,000 tons on which an increase of \$25 to \$30 per ton will have to be paid, a total increase of \$37,500,000 to \$45,000,000 annually. It is estimated the city of New York will be called upon to pay from \$7,500,000 to \$9,000,000.

International Paper Co., whose 1917 price has been taken as an average for the whole country in the above estimate, will receive \$12,000,000 to \$15,000,000 in additional revenue, as it produces one-third of the newsprint consumed. Although some allotments of 1917 tonnage by some of the large mills have been made at a price understood to be less than International Paper Co's figure, it is believed the average will be considerably higher than \$3.10 per 100 net f. o. b. mill.

The Characteristics of Wood Fibres

PART III.

By HARRY A. MADDOX, Specially written for Pulp & Paper Magazine.

The wood fibres of the paper manufacturer form in themselves a complete and interesting branch of study. For some reason or other the characteristics of the various classes of wood fibres have not been so carefully investigated and tabulated for practical use as have the fibres of other paper-making raw material. Yet in many ways the fibres from the different types of trees are as distinct and separate from one another in their characteristics as are the fibres from different plants. Without making up an exhaustive treatise we

ed at by the application of staining or coloring solutions. This matter will receive the necessary consideration in our final paper on the subject of fibre study.

For our purpose we may consider paper-making wood as divided into two classes, according to the type of tree from which they are derived, thus we have the coniferous or cone-bearing tribe typified by the pine and spruce and the deciduous tribe, typified for paper-making purposes by the poplar. Under the microscope it is to be observed that the wood pulp from coniferous trees is entirely composed of tracheids, i.e., cells or fibrous tubes through which air passes. The pulp from deciduous trees is constituted by both fibres and vessels. Coniferous wood is harder than the deciduous wood used for paper-making and the ultimate fibres from it are longer than those constituting the latter. It must be observed, however, that so far as the coniferous family is concerned, the length and shape of the ultimate fibres is governed largely by the



Fig. 1.—Types of Pine Fibres Magnified 100 Times.

hope we shall be able in the following notes to convey such information as will at least make it easier for the paper-making student to determine the source from which certain wood pulps have been obtained.

Generally speaking wood pulp fibres are somewhat similar to the cotton fibre, that is, they are often flattened in shape and embody a number of twists. The coniferous fibres are broader than cotton on the average, approximating to .030 m|m and the deciduous, .020 m|m against cotton .025. The character of the twists on wood fibres is different from that of the cotton fibre, appearing more like a sharp fold as against the corkscrew twist (occasioned by collapse) exhibited by the typical cotton fibre.

Whenever doubt exists as to whether a specimen is wood or cotton, a correct decision can readily be arriv-

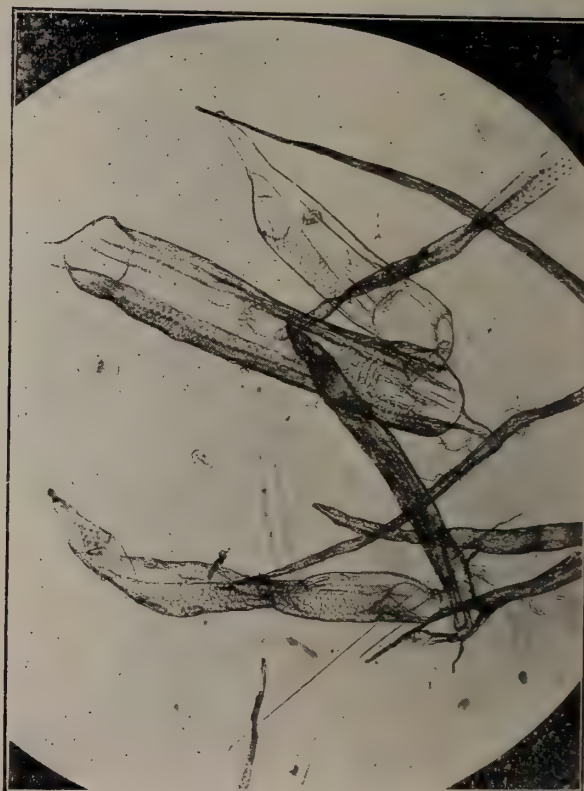


Fig. 2.—Vessels and Fibres of Poplar Wood Pulp Magnified 100 Times.

period of growth and formation. Thus the spring and summer tracheids are broader and flatter, with thinner sidewalls than the autumn and winter tracheids, whilst in the case of the former the ends usually appear blunted. The ends of autumn and winter tracheids, however, are more inclined towards a spindle shape.

Obviously then the period of growth to some extent influences the value of the fibre paper-making purposes.

Coniferous tracheids usually exhibit the characteristic pitted rings or circular pores; these are constituted by actual holes in the fibres and sometimes, when a twisted fibre is viewed on the jolo, the presence of the pores gives rise to an apparently serrated edge.

As we have before mentioned, the wood of different trees yields fibres or tracheids which vary from each other in some particular. With a knowledge of the variance, the student of paper-making materials may-



Fig. 3.—Vessels and Birch Wool Fibres of Cellulose Magnified 100 Times.

be enabled to determine with some degree of certainty the origin of the wood pulp fibres which he sets on to identify.

Dealing First With the Coniferous Series.

Spruce wood is composed entirely of tracheids and yields a fairly characteristic fibre. The shape is flat, ribbon-like and the ultimate fibre embodies a number of sharp twists or folds. Concentric double ring workings are generally to be observed, ranging from circular to oval in contour, whilst occasional traces of the medullary rays are met within the form of parallel cross markings between the pore marks. These medullary rays are the rays of cellular tissue seen in a transverse section of exogenous wood and which connect the pith with the bark. They are more prevalent in the wood of broad leaved trees than the conifer series.

The Pine tracheids are very similar to spruce, but show single ring markings in addition to the concentric pores. In many cases the shape of the markings approximates to a plain broad oval. As with Spruce,

traces of the medullary ray lattice markings are occasionally to be observed, but the cells are absent.

Twining to the deciduous series, poplar, is composed of true woody fibres, or libriform cells as they are termed, meaning the elongated cells of woody tissue. Compared against spruce, the fibres of poplar are very short and rounded; not so flat and ribbon-like. The side walls are thick and show occasional joints or nodes, after the manner of the linen fibre. In fact it may be said that among wood fibres the spruce partakes of the character of cotton while poplar in certain microscopic features resembles the linen fibre. The central canal of the poplar fibre is fairly wide and sometimes exhibits small oval pitted markings.

The most striking microscopic feature of poplar pulp consists in the presence of a large number of broad, thin-walled vessels. These vessels are marked with a beautiful lace effect pattern, the markings taking the form of symmetrically arranged pits or pores. As a rule one end of the vessel is blunted and the other shaped like a pointing finger. Each end shows a mouth and it is a peculiar characteristic of much importance, that whereas on the American poplar, the mouths of the vessels are strung across with a series of filaments, in the case of the European poplar, the mouths are plain.



Fig. 4.—Fibres of Mechanical Wood Pulp From Pine Magnified 100 Times.

Birch pulp contains fibres and vessels closely resembling poplar in character. The birch fibre, however, is slightly longer than poplar and exhibits small oval pitted markings. It is to the vessels that we must turn for a more clearly defined distinction. The vessels of birch and beech pulp are larger than those of poplar while the lace pattern is much less delicate and defi-

ed. The ends of the vessels have no especial feature like the poplar cells.

Mechanical wood pulp is easily identified through the microscope by the fragmentary character of the fibres. Very few of the fibres find their way through the grinding process in an intact state. The mode of vending the wood precludes the possibility of securing separated fibres. Thus, mechanical wood pulp, as seen through the microscope is characterized by rugged clumps or clusters and broken portions of fibre, often exhibiting signs of the transverse medullary rays and pitted pores (see photo micrograph).

The mode of grinding exerts a direct influence upon the microscopic features of the fibres. According to the method employed the logs may be ground one of three ways. Wood ground at right angles to the growth is known as cross ground, and the fibre in very short torn fragments. If the logs are longitudinally ground, i.e., from the outside in a direction parallel with the growth, the fibres will be longer and will bear a more individual character. The third method of grinding is to treat the cut logs from the inside in a radial direction, producing fibres of medium length characterized by a plentiful display of the medullary rays.

From this it may be expected that the longitudinal method of grinding will result in the production of the strongest and most suitable type of fibre for paper making.

Some information as to the identity of the wood may be gleaned from the appearance of the medullary rays and pitted pores. The number of pores appearing between the lines of medullary rays varies according to the type of tree from which the fibre originates. Spruce fibre commonly exhibits four pores whereas fibres from the common firs way only show one or two pores.

BATES AND INNES, LTD., TO OPEN MONTREAL OFFICE.

The expansion of business in the pulp and paper trade has also been marked in allied industries, and particularly those industries making mill supplies. Messrs. Bates and Innes, Limited, Carleton Place, Ont., manufacturers of pulp and paper makers' felts, mangle blankets, etc., are making numerous changes designed to facilitate their services to the pulp and paper mills of the Dominion. In addition to plant improvements and expansion, the company are opening a general sales office in Montreal, at 312 Coristine Bldg., St. Nicholas Street. Mr. E. S. Bates has been appointed sales representative, and after January 1st, will look after the interests of the company in the pulp and paper trade.

CANADA'S PAPER EXPORTS.

The growth of the pulp and paper exports from Canada is shown by the fact that for the twelve months ending August, 1916, the exports of paper amounted to \$21,934,073, and of wood-pulp \$13,932,541; total, \$35,866,614. With the higher prices which will prevail on all contracts made for next year, and with the great increase in capacity through new mills and enlargements, it is expected that Canada will be exporting close upon \$1,000,000 worth of pulp and paper per week next year.

Fear Freight Congestion Will Affect the Industry

NEW YORK, N. Y., Dec. 12th.

Railroad freight deliveries during the month, while far better than they were at this time last year, are still discouragingly slow and are now reported in danger of reaching a serious stage. In fact, the last statement made by the railroads show a large shortage in freight cars — at a time when the Holiday shipping is commencing. By way of explanation, it might be interesting to know that the coming Christmas business is expected by all trades to surpass anything of its kind which has ever been experienced in this or any other country. This means that the requirements in the way of freight facilities will be unusual — unusually great.

Already, fear for the future has been expressed by many of the local jobbers and manufacturers, to say nothing of the supply men, for the position of all is mutual. A number of embargoes have already been placed along certain routes making it impossible to ship to or from specified mills, temporarily, causing great inconvenience to everyone concerned. While discussing the question, your correspondent was very much impressed recently while talking with a supply dealer. Having had the foresight to see that the congestion of freight traffic in the East was inevitable, he had been endeavoring to establish himself with as many mills as possible, in various parts of the country. His idea was that if he continued, as he had been doing, supplying merely a few big plants, and if embargoes were laid on the roads leading to these mills, he might then find himself in a rather precarious predicament—without any immediate market for his stock. In order to avoid such a calamity, the dealer was seeking to establish himself in a number of directions, so that if a few points were blocked, he still had others to which he could ship.

To what extent the shortage of freight cars is liable to affect Canada, is hard to say. It may be that some roads over which considerable stock is now going into the United States, will be embargoed, but, even in this event, it is doubtful, judging from the reports we get here from the Canadians, whether this will really retard conditions or not. It the United States, however, and especially through the large cities in the east, it will be severely felt. Jobbers are referring to the situation which existed last December, during which time it was almost impossible to get merchandise from some mills.

Though it may not be generally realized, blocking of railroad freight traffic has a direct effect on the market situation, this having been clearly demonstrated during the past year. Various concerns had placed their orders for different commodities, in accordance with their usual custom. In some cases it was the mill ordering rags or paper stock, or pulp, or it might have been coal or chemicals. In other instances, it was the jobber ordering from the mill. Suddenly an embargo was placed which cut out freight communication with a number of mills. The rags or paper stock, which had been awaiting shipment, probably at the station, are held up, or put into storage pending the opening of the road. Or, as is often the case, the goods are already on their way to the consignee, when they are side-tracked and so placed in a

position where they can get no further for some time. The result has been, in such instances, that the mill, finding itself unable to get this shipment, would try in other quarters. The inquiry might go among a large number of dealers and thus an artificial demand would be created. Naturally, with a demand of this sort, prices would undoubtedly go higher. When freight traffic was again cleared, the mills found that they had large quantities of stock coming from different parts of the country, which had been held up and which had practically been overlooked.

An acute freight congestion, such as is now threatening, forces so much stock into storage, that all available warehouse space is soon taken, forcing more difficulties on the industry.

R. W. JOLLY.

LUMBERMAN'S ADVERTISING CAMPAIGN.

Lumber manufacturers will spend over a half million dollars in advertising lumber next year. R. H. Downman, president of the National Lumber Manufacturers Association, accompanied by the presidents of several of the lumber associations composing the national organization, has just returned from a western trip made in the interest of advertising and to combat the inroad substitutes for lumber have been making.

The committee visited all the lumber organizations upon the Pacific coast, and the following appropriations to the national advertising campaign have been obtained. National Lumber Manufacturers' Association, \$100,000; Southern Pine Association \$100,000; Northern Pine Association, \$50,000; Hemlock Association, \$50,000; North Carolina Pine Association, \$50,000; West Coast Association, \$210,000. Total \$560,000.

OTTAWA PAPERS COMBINE.

The Journal and Free Press of Ottawa have joined forces and after the first of the year the Free Press will cease publication. A new morning paper to be known as the Journal-Press will appear on that date. This will be a rival to the Citizen a fearless and ably conducted independent paper which here-to-fore had the morning field to itself. Ottawa will practically become a two paper city after January 1st.

FROM "AMONG THE TREES."

Ye have no history. I ask in vain
Who planted on this slope this lofty group
Of ancient pear-trees that with the springtime burst
Into such breadth of bloom. . . . Who was it laid
Their infant roots in earth, and tenderly
Cherished the delicate sprays, I ask in vain,
Yet bless the unknown hand to which I owe
The annual festival of bees, these songs
Of birds within their leafy screen, these shouts
Of joy, from children gathering up the fruit.
Shaken in August from the willing boughs.

—Bryant.

PAPER SUSPENDING.

Eight hundred country newspapers have suspended in the United States since the price of news print paper began advancing, according to a statement made before the California Press Association.

The Newsprint Shortage

(Special to Pulp and Paper Magazine).

New York, Dec. 12, 1916.

Quite a number of western newspapers will be compelled to seek other sources of supply, on account of the mills from which they have been obtaining their supply going off on other grades. In his letter to the members, G. F. Steele, secretary of the Newsprint Manufacturers' Association, calls attention to the matter and asks that mills having a surplus take care of the requirements of these publishers. Mr. Steele says, "The list of contracts which have been abandoned by manufacturers is growing all the time, and it is particularly desirable that if any of the members of this Association have any surplus tonnage to place, they will first take on these publishers, who have at present no source of supply. The size of these contracts is small, and the aggregate amounts to something like 10,000 tons, but these smaller publishers are less able to help themselves than larger publishers.

The list of the papers and firms with their tonnage, follows:

Galesburg (Ill.) Evening Mail, 275; St. Paul (Minn.) Volkszeitung, 700; Colorado Springs (Col.) Gazette, 500; Fort Scott (Kan.) Tribune-Monitor, 60; Albuquerque (N. M.) Morning Journal, 250; Milwaukee (Wis.) Times, 150; Sterling (Ill.) Gazette, 90; Pittsburgh (Kan.) Headlight, 150; Shreveport (La.) Times, 600; Menominee (Mich.) Herald-Leader, 60; Mankato (Minn.) Free Press, 100; Springfield (Mo.) Republican, 200; Hastings (Neb.) Tribune, 100; Omaha (Neb.) Tribune (German), 250; Albuquerque (N. M.) Evening Herald, 80; Enid (Okla.) Daily Eagle, 100; Mitchell (S. D.) Capital, 70; Sioux Falls (S. D.) Argus-Leader, 215; Antigo (Wis.) Berner Brothers, 65; Sante Fe (N. M.), New Mexico Printing Company, 80; Alton (Ill.) (or Federal), Alton Box Board Company, 500; Marinette (Wis.) Eagle Star, 90; Fremont (Neb.) Daily Tribune, 125; Texarkana (Ark.) Courier, 100; Pine Bluff (Ark.) Commercial, 60; Owosso (Mich.) Daily Argus, 100; Grand Forks (N. D.) Herald, 400; Aberdeen (S. D.) Free Press, 80; Aberdeen (S. D.) American, 125; Fort Dodge (Ia.) Chronicle, 80; Topeka (Kan.) State Journal, 600; Sioux City (Ia.) Tribune, 1,500; Sioux City (Ia.), Sioux City Printing Company, 300; Fargo (N. D.), Western Newspaper Union, 400; Cheyenne (Wyo.) Tribune, 140; Salina (Kan.) Union (Central Publishing Company), 250; Salina (Kan.) Journal, 125; Iola (Kan.) Register, 100; St. Joseph (Mo.) Journal, 125; Guthrie (Okla.) Leader, 100, and Chicago (Ill.) Daily Calumet, 100. The total is about 10,000 tons.

Since the above was received, J. R. Booth, of Ottawa has taken care of the tonnage of the Colorado Springs (Colo.), Gazette; the Lincoln (Neb.) Star Publishing Co.; The Atchison, (Kan.) Globe; the Leavenworth (Kans.), Post; the Fremont, (Neb.), Hammond Printing Co.; the Sioux Falls S. D. Argus-Leader; the Aberdeen (S. D.) Free Press; the Little Rock (Ark.) Gazette, and the Milwaukee (Wis.) Sentinel. The price is 3 cents a pound, at the mill.

WAYAGAMACK MEETING.

The Wayagamack shareholders at a meeting on Saturday, the 9th inst., ratified an increase in the number of directors, but the election of new members is deferred until the annual meeting.

BUYERS AFTER EDDY COMPANY.

A number of offers have been made at the E. B. Eddy Company, of Hull, Que., by capitalists but up to the present these have all been turned down. One of the offers involved a cash deposit of \$5,000,000 but even this display of "greenbacks" failed to arouse a response from the larger shareholders.

The position at the present time is largely this, that while some of the minority interests in the company were not unwilling to consider an offer to sell out their holdings, the controlling interest, which is in the hands of the founder's immediate family, has been averse to any alteration in the present status of the business.

The capitalization of the existing company is very small relatively to the amount of business done. It is understood that the outstanding bonds of the company are only about \$450,000 and the capital stock \$300,000. On the basis of one bona fide cash offer made from Montreal for the property in the past few days shareholders could have realized \$1,500 a share for their holdings. This is not only a high price in itself, but particularly high in view of the fact that the company has been putting profits back into the business, and recently at any rate shareholders have not been receiving any return on their investment in the form of dividends.

In a press interview Mr. George Millen, president of the company said: "It is true that we have been approached on several occasions by a group of Canadian financiers, but we have turned down all offers."

Mr. Millen would not say who the financiers were, but he admitted that between nine and ten millions of dollars had been offered for the purchase of the plant.

NORTHERN ONTARIO FIRE LOSSES.

Reports to the fire marshal's office from northern Ontario fire are now closed, and after a thorough survey of the territory, the following figures were given by provincial fire marshal E. P. Heaton, as the official record of the loss to created property:—

In all, 849 people have suffered loss, some having more than one property involved, but no effort has been made to ascertain the total number of buildings destroyed.

The aggregate loss sustained reaches total of \$2,34,349. The insurance recovered or claimed upon licensed and unlicensed companies is \$1,045,585, and he loss sustained by the people in excess of insurance is \$1,088,764. About 50 per cent of the actual loss in property is covered by insurance.

No provision is made for loss on standing timber, but included are pulpwood cut, stacked and ready for delivery.

FRANCE BARS NEWSPRINT.

The French government has decided to prohibit the exportation of printing paper, according to a semi-official announcement. The object of the step is twofold, to help raise the exchange and to encourage the French industry which, in view of the local resources in lumber is considered ought to be independent of foreign supplies.

U. S. EXPORTS.

Exports of paper and manufactures thereof from the United States for first nine months of 1916 were valued at \$28,197,097, as against \$15,855,073 in 1915, and \$15,597,3 in 1914.

PRICE BROTHERS ADDING NEW MACHINES.

Mr. John Ball, general manager of Price Brothers' Paper Company, of Kenogami recently purchased a million dollars worth of new machinery for their mills.

Mr. Ball stated that already ten million dollars is invested in the mills of the company, and the new order is simply for additional machinery to bring about greater efficiency. The biggest paper machine in the world is to be placed in this mill. It will be 232 inches wide and is being manufactured in England. He said that most of the order for new equipment would be placed in England and in Canada, buying here only such machinery as they are unable to secure in English shops.

The mills manufacture 66,000 tons of news print a year and all but 2,500 tons goes into the states. New digesters and sulphite equipment are being installed by Price Brothers in addition to the machinery.

According to Mr. Ball his company employs 750 men in its paper mills, and three thousand men in lumbering operations. Since the beginning of the European war 12 per cent of the men have enlisted in the Canadian army.

SPANISH RIVER PREFERRED CERTIFICATE PLANS.

An interesting judgment regarding dealing in Spanish River preferred has been rendered by the Montreal Stock Exchange and is to the effect that interim certificates issued to Lake Superior shareholders do not constitute good delivery.

It is now understood that the Spanish River company is considering a plan to adjust the inequalities in the issue and that this plan has been tentatively discussed by the directors. It may be decided to issue to the original Spanish River shareholders warrants covering the 1913-1914 dividend; that would leave all the issue with July, 1914, as the starting point of accumulated dividends. The interim certificates given for Lake Superior stock could then be exchanged for definitive certificates, which would rank on the same footing as the original Spanish River issue.

ELEVEN NEW WOODS FOR MANUFACTURE OF PAPER.

Tests have recently been conducted at the service laboratories at Wausau and Madison, Wis., with the idea of developing new methods and improving the old ones used in manufacturing ground wood pulp. The tests show that eleven new woods give promise of being suitable for the production of news print paper while a number of others will produce manilla paper and box boards.

Most of these woods are confined to the west, while the ground wood industry now obtains the bulk of its raw material from the east. It is thought that pulp-making plants must eventually move to points where they can obtain a plentiful supply of wood and an abundance of cheap water power.

MR. STEELE TAKES A REST.

Mr. Geo. F. Steele, Secretary of the Newsprint Manufacturers Association, who has been in indifferent health for a number of months, has been forced, on the advice of his doctors, to relinquish his work temporarily and left on December 5th for the Sanitarium at Watkins Glen, N. Y., where he will remain until the first of the year.

The New Lefebvre Process

Mr. A. H. Lefebvre, of the Black River Mill, of the St. Regis Paper Company, claims to have discovered a process of making paper without sulphite. In explaining his system, Mr. Lefebvre says:

"In producing paper from wood, both chemically and mechanically, during the past fifty years, it has been customary to screen the product through very fine perforations to separate the fibre fit for paper from the sand, bark, knots, over-cooked wood, pieces of metal, etc., that would follow the wood through the various processes required to make paper. The rejected material was sometimes wasted, or used to make an inferior quality of paper. Many mills have systems of refining to recover the fibres adhering to the rejected materials. Their product can be easily distinguished, as the refiners make the knots, sand, bark, etc., so fine that it is evenly distributed throughout the finished paper, the finest screens being too coarse to keep out the dirt contained in the screenings.

"Here is the theory: Water will wear away a grain of sand in a certain length of time which we will call a day for comparison sake. It will dissolve a grain of resinous material used to cement together the small fibres that form a piece of wood in a certain length of time which we will call a minute. We then have 1,440 times as much time at our disposal while the grain of sand is being reduced to powder as we need to separate the small wood fibres from the sand which may be attached to it by the very resinous material we are waiting to have dissolved by the water. It then becomes a very simple problem, for almost all material unfit for paper has a lower specific gravity. While wood fibres float in the water, the sand, knots, bark, etc., sink and are not acted upon by the water moving over them. The result is the Lefebvre System.

"As the pulp leaves the grinders it is passed through coarse screens to keep out the slabs and edgings that are allowed to slip between the grinder pockets and the grindstone. These coarser pieces of wood are shredded into small pieces and are then allowed to go through the three-quarter-inch perforations to mix with the fine pulp and be treated in twenty successive scrubbing tanks, where nearly all the unfit material is separated and dropped. Each scrubbing tank discharges into the next one until the settling tank is reached. This is of slightly greater depth, but of ten times the area, so that the water nearly comes to a state of rest. This permits the knots and bark to sink slowly while the pulp remains suspended.

"The water cannot be allowed to stand long, as the good fibre has a tendency to become waterlogged and settle in a layer immediately above the unfit material. A pump takes the water from the settling tank and discharges it into a vertical conduit about twenty feet high, but of such capacity that the water travels upward very slowly, not exceeding twenty feet per minute. Nothing having a specific gravity heavier than water can follow up the tube.

"From the top of the vertical conduit the water discharges into the regular pulp screen, where all fibres small enough to pass through the perforations are carried to the paper machine and into paper. The material rejected by the screens is conducted back to the shredder to mix with the fresh pulp being produced. It passes over the scrubbing tanks again as many times as may be required to reach the ultimate smallness

to pass through the perforations in the screens at the head of the paper machines.

"There is no place in the system for waste fibre or water. The same water is used over and over, and the Lefebvre System being used primarily to extract material unfit for paper, extracts the dirt from the water, so that starting with a supply of water obtained from the Black River, full of leaves, twigs, sand and clay, a few hours makes the water clean. It is used in this system from four to six weeks before it is necessary to let it run off, when the settling basin and scrubbing tanks are emptied of the material deposited by gravity that was unfit for paper.

"The quantity of final rejection is very small, 200 tons of finished paper showing a yield of sand, knots, bark, etc., of about 200 pounds when using 140 cords of peeled spruce to produce the 200 tons of paper. The cleanness and fineness of the pulp depends upon the desires of the manufacturer. The pure water and pure fibre do not seem to have the wearing effect upon the screen plates.

"The strength of the sheet is about 10 per cent greater than the sulphite sheet, due to the better formation on the paper machine. This is due to what is called 'slowness' of the ground-work when compared to chemical fibre. The water does not part company with the ground-wood fibres as readily as it does with the chemical fibre, hence it is necessary to 'free' it up. This is accomplished by heating the mixture about 10 degrees, and then the water leaves rapidly enough to permit the sheet to be made and dried at the same speed as the commercial newsprint with a percentage of sulphite. The presence of the water later results in a more opaque sheet which has two advantages. The ink on a paper does not show through quite so readily as it does on the regular sulphite sheet. In the second place it requires only about one-half as much ink. The closer formation of the paper brings about this result."

THE NEWSPRINT SITUATION.

Newsprint mills with a combined output of 625 tons daily will enter the market in 1917, but it is estimated that the net increase in output will amount to only 150 tons daily, or 45,000 tons annually, owing to the fact that newsprint machines with capacity of 500 tons daily will turn to the manufacture of other papers. The following make up this increased output:

Abitibi	175 tons daily,	Dec., 1917
Pacific Mills	100 " "	June, 1917
Union B & P., St. Maurice.	100 " "	Jan., 1917
Price Bros.	50 " "	April, 1917
Ontario Paper Co.	50 " "	Feb., 1917
Brompton.	50 " "	Dec., 1917
International (Otis)	50 " "	Jan., 1917
Northwest	50 " "	March, 1917

Hawley Pulp & Paper Company February, 1917, 50 tons.

Great Northern Paper Company, January, 1917, 50 tons.

In the last ten months the shipments of 43 large mills in the United States actually exceeded production by about 24,000 tons.

The Capital Paper Co., South Pennsylvania street, was destroyed by fire, recently, the loss being estimated at \$150,000.

BROMPTON PAPER TO BE LISTED.

The securities of the Brompton Pulp and Paper Company are shortly to be listed on the Montreal and Toronto stock exchanges. Trading in the unlisted department has been going on for several days.

There has been talk of the stock going on a 4 per cent dividend basis at an early date. Action in that respect will probably await the completion of the new company's first quarter, which will end January 31st.

The company is one of the largest producers of ground wood pulp in Canada, and at present prices is earning very large returns on the capital. The company also manufactures news, kraft, boxboard, lumber, etc., etc.

TO LIST PROVINCIAL PAPER SECURITIES?

It is said that arrangements are being made for the listing of the securities of the Provincial Paper Mills Company, on the Montreal Stock Exchange. There is issued \$2,481,300 common stock and \$1,585,000 7 per cent cumulative preferred. The company has a bond issue of \$125,000, of which \$36,000 is in the treasury, \$79,000 held by banks as collateral, and \$10,000 sold. Its output of book and magazine papers represents about half the Canadian production in those lines. Having been a successful enterprise in days of low paper prices, it is now prospering under present high prices. A dividend of 4 per cent per annum has been declared on the common stock.

ABITIBI TO BE LISTED.

Abitibi Power & Paper Co's securities will be listed on the stock exchanges at Montreal and Toronto before long. The listing of the stocks, in which a fairly active market has developed on the curb, has been discussed a number of times, but it was generally understood that the larger interests in the company were opposed to it. However, at a meeting of the directors held a few days ago, it was decided to make application for quotation on the exchanges, and as soon as the necessary formalities are compiled with Abitibi will be added to the paper group which has rapidly been coming into prominence in the Canadian markets.

The first dividend declaration of the Abitibi Company was made last week, a payment of $1\frac{3}{4}$ per cent being ordered on the preferred. It will be paid January 2nd to shareholders of record December 20th. The preferred issue amounts to only \$1,000,000, and while dividends are cumulative from January 1st, 1914, the retirement of the obligation could impose no strain in view of present large earnings. The company's new construction programme to double the present output will probably delay action in that respect for some time, but in the interval it is evident that the company proposes to keep arrears from growing any larger by starting a regular quarterly policy. With the declaration of the recent dividend the company will turn into the new year with arrears of $19\frac{1}{4}$ per cent, or \$192,500.

Estimated earnings for 1917 run as high as 25 to 30 per cent on the common stock.

DEPARTMENTAL STORES AND PAPER FAMINE.

Paper famine has hit American department stores hard, many of heavy grades of paper used for wrapping, and of tissue paper used for inside wrapping, having advanced from 300 to 400 per cent in last year. Paper bills of some of larger stores will be from \$50,000 to \$100,000 more than last year.

CANADA'S WHITE PINE IN DANGER.

The highly valuable white pine forests of Ontario, Quebec and New Brunswick are in danger of extinction by the outbreak of 'white pine blister rust' a disease originally brought over from Germany on pine seedlings.

Infected areas have been located in Ontario, in the Niagara Peninsula, and in Simcoe, Durham, Wellington and Victoria counties. In Quebec, several outbreaks have been found near Montreal. An investigation has been under way for some months by provincial government officers, but to prevent another disastrous visitation of disease, such as cleared off most of the tamarack and chestnut trees, the most vigorous measures will have to be taken by all Governments, lumber companies, and individuals.

The disease spreads through gooseberry and currant bushes which are used as a "host" plant. The rust forms yellow patches on the under side of the leaves, then develops late in June into spores on the currants and berries and is carried by the wind to the white pine. No preventive is known, other than destruction of the two kinds of berry bushes and of all five-needled trees found to be infected. The Governments of the Eastern States have made appropriations for an immediate campaign to locate diseased sections and to suppress the infection.

OUR EXPORTS OF FOREST PRODUCTS.

In the first eight months of the present calendar year Canada exported \$34,862,282 worth of forest products an increase of 18 per cent. as compared with 1915, and 25 per cent. as compared with 1914:

	1913.	1914.	1915.	1916.
Jan. . .	\$1,983,980	\$2,159,088	\$1,811,049	\$3,243,360
Feb. . .	2,212,485	1,961,206	2,342,590	2,595,420
March . .	2,359,351	2,694,986	3,440,941	3,247,691
April . .	1,869,715	1,847,739	1,929,440	2,287,939
May . .	3,039,563	3,296,455	3,487,103	4,174,038
June . .	4,323,636	4,511,249	4,904,152	5,846,672
July . .	4,938,716	5,097,065	5,876,784	7,257,805
Aug. . .	5,063,551	4,256,635	5,846,897	6,209,357
Sept. . .	5,347,458	4,945,471	6,527,625	.....
Oct. . .	4,505,067	4,935,715	5,503,343	.....
Nov. . .	4,107,090	3,439,970	4,556,502	.....
Dec. . .	2,782,061	2,698,804	3,553,083	.....

Totals \$42,532,673 \$41,871,383 \$49,779,509 *\$34,862,282
(*)—Eight months.

THE DEMAND FOR NEWSPRINT.

It certainly appears now as though the demand for newsprint paper will completely fill the activities of all the mills producing this grade of paper for at least a year to come, and there is little likelihood that the price of newsprint paper will ever go back to the prices which existed prior to the European war.—G. F. Steele, secretary Newsprint Manufacturers' Association.

The Federal Trade Commission of the United States announced it would start thorough investigation of newsprint shortage, beginning with public hearings in Washington, December 12th. Testimony will be taken from print paper manufacturers, jobbers, publishers and others.

PULP AND PAPER NOTES.

There are 2,580 daily newspapers in the United States.

* * *

The United States Postoffice Department will open bids on December 19th for 6,000,000 pounds of postal card paper.

* * *

London Daily News has cut size of its issues to six pages. Other British newspapers are expected to follow suit.

* * *

It is reported that the directors of the North American Pulp and Paper Companies have voted to expend one million dollars in the further development of its various mills.

* * *

The Howard Smith Paper Mills, Limited, Montreal, has taken steps to standardize its Bell-Fast Ledger and in future they will make this grade in all the standard sizes on a basis of 17 x 22—28-lbs. only.

* * *

J. E. A. Dubuc, president of the North American Paper Company, says that in his belief Canada will eventually produce enough wood pulp to supply the needs of the entire world.

* * *

The Kalamazoo and Rumford Falls, Maine, paper companies have purchased the Edward Partington Pulp & Paper Co. of St. John, N. B., for \$3,000,000.

* * *

The twenty-five Kansas daily newspapers, confronted with danger of being unable to obtain newsprint paper, have appealed to Federal Trade Commission for relief.

* * *

Late James Hobart Moore of Chicago, who with his brother organized the Diamond Match Co. and was active in formation of United States Steel Corporation, left an estate of more than \$10,000,000.

* * *

The fine writing paper mills of Berkshire county, including those of Z. and W. M. Crane, Byron Weston Co., Eaton, Crane & Pike Co., Rising Paper Co., Mountain Mills Co., and L. L. Brown Paper Co. have announced 10% increase in wages for 2,050 skilled paper makers.

* * *

Japan has entered paper making on scale that permits large export of paper pulp to this country and India. Dense forests, cheap labor, excellent timber and cheap coal and sulphur make possible constantly increasing output.

* * *

The London Spectator, commenting on possibility of United States embargo, suggests that if the United States put embargo on exports of food to allied countries, Parliament at Ottawa might conceivably put embargo on its logs and pulp to United States, and asks where newspapers of United States would then get sufficient paper to meet demands.

* * *

The International Paper Company has announced the inauguration in its mills of a bonus system equivalent to a ten per cent. increase in wages, which will affect all its employees.

FUEL VALUE OF WOOD.

The fuel value of 2 pounds of wood is roughly equivalent to that of 1 pound of coal. This is given as the result of certain calculations now being made in the Forest Service laboratory, which show also about how many cords of certain kinds of wood are required to obtain an amount of heat equal to that in a ton of coal.

Certain kinds of wood, such as hickory, oak, beech, birch, hard maple, ash, elm, locust, longleaf pine, and cherry, have fairly high heat values and only one cord of seasoned wood of these species is required to equal one ton of good coal.

It takes a cord and a half of shortleaf pine, hemlock, red gum, Douglas fir, sycamore, and soft maple to equal a ton of coal, and two cords of cedar, redwood, poplar, catalpa, Norway pine, cypress, basswood, spruce, and white pine.

Equal weights of dry, non-resinous woods, however, are said to have practically the same heat value regardless of species, and as a consequence it can be stated as a general proposition that the heavier the wood the more heat to the cord. Weight for weight, however, there is very little difference between various species; the average heat for all that have been calculated is 4,600 calories, or heat units, per kilogram. A kilogram of resin will develop 9,400 heat units, or about twice the average for wood. As a consequence, resinous woods have a greater heat value per pound than non-resinous woods, and this increased value varies, of course, with the resin content.

The available heat value of a cord of wood depends on many different factors. It has a relation not only to the amount of resin it contains but to the amount of moisture present. Furthermore, cords vary as to the amount of solid wood they contain, even when they are of the standard dimension and occupy 128 cubic feet of space. A certain proportion of this space is made up of air spaces between the sticks, and this air space may be considerable in a cord made of twisted, crooked, and knotty sticks. Out of the 128 cubic feet, a fair average of solid wood is about 80 cubic feet. — American Forestry.

TREES.

(By Stephen Henry Thayer).

What is the wisdom taught of the trees?
Something of energy, something of ease;
Steadfastness rooted in passionless peace.

Life-giving verdure to upland and glen;
Graces—compelling the praises of men;
Freedom that bends to the eagle and wren.

Largess—expanding in ripeness and size;
Shadow that shelters the foolish and wise;
Patience that bows 'neath all winds of the skies.

Uprightness—standing for truth like a tower;
Dignity—symbol of honor and power;
Beauty that blooms in the ultimate flower!

Canadian exports of newsprint to the United States during July, 1916, were valued at \$1,534,795, whereas in July, 1915, the value was \$1,218,321. In addition to paper, Canada exported to the United States pulpwood valued at \$6,102,170 and woodpulp to the value of \$10,793,647.

PULP AND PAPER NEWS

J. B. Morrow, general manager of the National Paper Company, who has been laid up with lumbago at his home in Montreal, is much improved.

The capital stock of the Canadian Advertising Agency, Ltd., has been increased from ninety-nine thousand dollars to two hundred and fifty thousand dollars.

Thomas Gain, sales manager of the Don Valley Paper Mills, Toronto, has returned from spending several weeks in Hamilton, Bermuda. He is much improved in health.

Among the western visitors calling upon the trade in Toronto during the past week were John Martin of the John Martin Paper Co., Winnipeg, H. L. Wilson of the Willson Stationery co. and Winnipeg Envelope Co., Winnipeg, and W. S. Quinn, manager of the Public Press and publisher of the Grain Growers' Guide. It is understood that they were all on the look out for paper supplies for the coming year.

The Western Waste Paper Co., Limited, has been organized and is operated by the John Martin Paper Co., of Winnipeg, warehouses have been established in Regina, Saskatoon, Calgary and Edmonton where different kinds of waste paper are regularly collected. The company give bags to leading business houses, printers and manufacturing firms and already a large business is being done in the way of collecting material of all kinds which formerly was burned up. This progressive move is proving a great help to the business houses, the Red Cross Society and the paper mills themselves in furnishing them with stock. All the paper is carefully sorted at the warehouses and it is expected that 250 tons a month will be gathered in. Large advertisements have appeared in the daily press urging the people to save scrap paper, magazine and book stock, ledger, bond, kraft and other kinds.

A charter has been granted to the Wax and Glassine Paper Company with headquarters in Cookshire, Que. The capital stock is \$225,000. The company is empowered to carry on in all its branches manufacturing and dealing in logs, lumber, pulp and paper.

The Empire Pulp and Paper Mills, Swanson Bay, B. C., who have completely overhauled the pulp and saw mill have begun the manufacture of sulphite pulp. A third digester is being added to the sulphite plant. The output at present is from thirty-five to forty tons a day and a concrete chip drier of special type has been installed. About 250 men will be employed in the pulp and saw mill. The product of the company will be shipped to Vancouver and Prince Rupert for rail transportation and for export vessels can be loaded at Swanson Bay. Fifteen hundred horse power is generated near the head of Swanson Bay and it is possible to develop 12,000 horse power if required. G. F. Whalen is the president and general manager of the Empire Pulp and Paper Mills, Limited.

Good progress is being made on the plant of the Mattagami Pulp and Paper Company at Smooth Rock

Falls. It is understood that the capacity of the industry will be one hundred and fifty tons of sulphite a day. The digesters which are 65 x 19 are expected to arrive this month and the mill will be in operation by June next. The company are taking out seventy thousand cords of pulp wood this winter and have 250 men in the bush and about 300 on construction work. The screen room digester and blow pits are housed in while the foundations for all the other buildings are completed. The big concrete dam, which is 380 feet long, is well on its way to completion. All the structures are of reinforced concrete.

A federal charter has been granted to the Michipocoten Power and Paper Company, Limited, with headquarters in Toronto and a capital stock of \$6,500,000 of which \$2,500,000 will be preference stock and the remainder common. It is the intention of the company to erect a hundred and fifty ton news mill at Michipocoten Harbor, which is about 120 miles west of Sault Ste Marie on the shores of Lake Superior. The mill will have three machines and a fourth will be added later. The company will also put up a hundred and twenty five ton ground wood plant. It is expected that the outlay on the mills and the development of the water power will be in the neighborhood of six million dollars. A special report by C. H. and P. H. Mitchell of Toronto and H. S. Ferguson of New York, estimates the water power available on the Michipocoten River as 30,000. The company also owns 330,000 acres of rich pulp wood lands which have been purchased from the Algoma Eastern Railway and control a million acres in the clay belt lying along the Algoma Central Railway between the Grand Trunk Pacific and the Canadian Northern lines. The site for the new mill is regarded as an ideal one as there is water communication with Chicago and all lake ports. Michipocoten Harbor is the shipping point for coal to all western cities. Toronto and New York capitalists are interested in the big proposition, at the head of which is Lewis Miller Wood of Toronto, who is widely known in pulp and paper circles and as a financial agent. He is president of the Standard Chemical, Iron and Lumber Company, the Guardian Realty Co. of Canada and a director of the Canada Pipe and Steel Company and the Cluff Manufacturing Company. Mr. Wood was associated with the original issue of the Spanish River Pulp and Paper Company, and with his brother John Wood arranged the first reorganization of the company. He has also been interested in the securities of the Cedar Rapids Manufacturing and Power Co., the Riordon Pulp and Paper Company, the Canadian Consolidated Felt Company, the Canada Wire Nail and Cable Co. and other organizations. It is expected that a meeting of the Michipocoten Power and Paper Company will be held in a few days for the election of officers.

The capital of the Howard Smith Paper Mills, Ltd., has been increased from one million to three million dollars by the creation of twenty thousand shares of one hundred dollars each.

The Canada Paper Co., Limited, Windsor Mills, Que., are completing a large addition to their finishing room. It is of reinforced concrete and brick construction two stories high and 128 x 57 feet. The company will install larger supercalenders and otherwise add to their equipment.

The scarcity of pulp wood is being felt on all sides and rossed wood is now bringing from fifteen dollars up, delivered at Thorold. The settlers of Northern Ontario are not taking out nearly as much wood as last season and are asking very high prices. There has been an advance in the figure for peeled wood of one dollar during the past week and buyers are scouring the country for supplies.

E. R. Heyland of the Monteith Pulp and Timber Co., has returned to Toronto after an extended visit to Quebec in search of pulp wood. The plant of the company at Monteith has been closed down for the winter and no pulp wood is being taken out owing to the very high wages and the great difficulty in securing help. Last season the firm took out fifteen thousand cords. It is predicted that rossed pulp wood will be selling at twenty-five dollars delivered at Thorold and other points before spring and twenty dollars is now being paid at Niagara Falls, N. Y. Peeled wood is commanding as high as ten dollars now at point of shipment and comparatively little is being cut by the settlers. Many men who formerly were inclined to go to the bush are working in munitions plants. The situation is not encouraging, to say the least, in the matter of supplies for pulp mill which have not limits of their own. In many instances they will have to take green wood, but as most plants have barkers they will not object to this providing they can secure the raw material at all.

It is predicted when the new prices of envelopes are issued for the coming year that they will show an increase of fully fifty per cent. owing to the tremendous advance in sulphite pulp, writing papers, manilla and box board not to speak of the high cost of labor. In numerous instances the figure for raw materials have ascended over one hundred per cent.

Word comes from Winnipeg that there is every possibility of a paper mill being erected adjacent to that city. J. D. McArthur, who is well known as a lumberman and railway builder, is behind the enterprise. The proposed plant would have a capacity of fifty tons daily and would manufacture wrapping papers and possibly news. The province for many years has been very anxious to secure a paper mill.

Announcement has been made during the month that two large mills for the manufacture of sulphite pulp will be erected at once, one by the Empire Pulp and Paper Company, Limited, Quatsino Sound, with a capacity of 40 tons per day, and the other by the Colonial Pulp and Paper Company, Limited, at Swanson Bay, with a capacity of 70 tons per day. The Ocean Falls plant of Pacific Mills, Limited, is nearing completion and will be in operation next March. When these three mills are completed the output of paper will be, for the five companies operating in this province, 130,000 tons of paper per annum and 100,000 tons of chemical pulp, against the present output of 50,000 and 30,000 respectively.

Good progress is being made on the new buildings of the Mattagami Pulp & Paper Co., at Smooth Rock Falls, Ont. The concrete for the dam which is 380 feet long, is being poured at present and the screen room, digester room, and blow pit department are practically completed so far as the walls and roofs are concerned. The foundations for the machine room, wood preparing plant, boiler room and power house are all in. It is expected that the two new digesters will arrive in three weeks. They are each 65 x 19. A third digester will be added later. The company have fourteen engineers on the job under the direction of S. R. Armstrong, general manager, 350 men are working on construction and 250 in the woods. Seventy thousand cords of pulp wood will be taken out this season. The management expect that the plant will be in operation early in June next, and the output will be 120 tons of unbleached sulphite. There is at present about two feet of snow at Smooth Rock Falls and the temperature last week touched fourteen degrees below zero.

Hon. G. Howard Ferguson, Minister of Lands, Forests and Mines, was waited upon by a large and influential delegation this week, the members of which sought to impress upon the Ontario authorities the urgent necessity of re-organizing the forest protection system of the province. The government will be asked to pass a law giving fire rangers control of the dangerous burning of slash in the clearing operations of settlers. This is known as the "permit system", now successfully worked in British Columbia, Nova Scotia and various sections of Quebec. Among other requests made was the appointment of a skilled officer as head of the fire ranging service with authority to re-organize the present ranger system, introducing thorough inspection of the field men and the development of fire preventive aids such as trails, lookout tours, telephone lines, etc., wherever feasible. The delegation was given a sympathetic hearing and was organized by the Canadian Forestry Association.

THE QUESTION DRAWER.

1.—In making pulp board on a 112-inch 6 cylinder machine containing 69 dryers arranged in three sections we occasionally have trouble with the plies splitting. The first section of 20 dryers ordinarily operate at a pressure of 12 to 15-lbs., while the second section of 20 dryers and the third section of 29 dryers carry from 20 to 30 lbs., pressure. When carrying too high a pressure on the first section we have trouble with the board blistering but the men in the mill have different opinions as to whether too high a pressure on the second and third sections will cause the board to split. We would be interested to learn the opinions and experience of your readers in this connection.

2.—What are the benefits of grinding wet wood and what percentage of moisture in the wood produces the best results?

3.—What method is best for refining ground wood slivers? Also do the results obtained justify the amount of power for refining?

The American Writing Paper Co. is said to have developed several kinds of paper formerly made exclusively in Germany. One form is a photographic paper for which Germany held the secret.

PUBLISHERS HOPE TO KEEP MILLS WORKING ON NEWS PRINT BY REDUCING WASTE CONSUMPTION OF WRAPPING PAPER.

New York, N.Y., Dec. 9, 1916.

It is hoped by many of the publishers that the widespread movement urging the saving of wrapping paper, or rather the economy in its use, will have an ultimate favorable bearing on the newsprint situation. One of the chief fears among the consumers of newsprint, and it is not without ground, is caused by the tendency of some of the mills to switch on to such grades as wrappings and fibres which are in big demand and which can be sold in the market at top, or somewhere near top prices. The idea is to curtail all of the waste accompanying the use of wrappings and thereby reduce the demand, thus making this field less alluring to the ambitious newsprint manufacturer. Whether or not this is a practical idea, cannot be stated, for it has not yet had the common consideration of the various publishers, but it will be interesting to note some of the facts in regard to it.

The movement to reduce the waste of wrapping paper is said to have originated with one of the daily newspapers in Washington, D.C., and has now spread to many of the larger cities throughout the United States. The attention of the department store proprietors everywhere has been called to the way in which this particular item has been handled and, as a result, their close co-operation has been assured. During the past week or so, most of the New York newspapers have devoted considerable space to the question of curtailing the consumption of wrapping paper and various plans conceived by the heads of departments of different concerns were printed, showing that the movement was gaining headway. It is realized that less attention has been paid to the subject of wrapping paper than to any other grade. Everyone is acquainted with the careless manner in which the average package is wrapped. Usually enough paper is put on one package to accomplish a similar purpose for two or more similar bundles. According to the new rules being handed out in the department stores, only such packages will be wrapped in paper as absolutely require it, and in these cases, the strictest economy will be observed. In the instance when goods are encased in cardboard boxes, an effort will be made to eliminate entirely the use of wrapping paper. One of the employees of Acker, Merrall & Condit Company, large grocers and dealers in cigars, in New York City, has been quoted to the effect that his concern will not, in the future, wrap boxes of cigars when sending them out among its many stores. These are only a few of the many schemes which have already been put into effect and show the tendency in the direction of saving paper.

There is but little logic required to see "through" what it is hoped will be the outcome. The demand for wrapping papers to-day is so great that it is only with difficulty that stock can be bought and, then, the seller can command his own price. The manufacturer of newsprint has ever shown himself averse to making this class of goods when it was possible for him to change his machines over to wrapping paper—that is when the market was of such a character that it could stand for the increased production. The way things are to-day, the wrapping paper market can stand for all of the production that can be had and it is this fact that is tempting the news men to go into the more profitable field—temporarily at least. With many

of the newsprint contracts expiring and many which have expired and were not allowed to be renewed, the moment would be propitious for this "switching." In fact, it will be remembered that, during the early course of the investigation which is now being conducted by the Federal Trade Commission that this body suggested that the mills keep their machines to newsprint and try to divert any machines already working on other grades, back on to news. But it was clearly shown that this was not a business proposition and could not be hoped for under the present conditions.

The publishers, or at least a number of them, have some confidence in the campaign now being waged and, judging from the figures issued by many of the department stores, estimating what they expected to have in money, because of this campaign, it is possible that some direct effect may result. It will be interesting to follow this movement and to note what its consequences will be. It is, to all appearances, the first of its kind in the history of the industry.

R. W. JOLLY.

WAR BOOMS JAPANESE INDUSTRIES.

According to a financial article in the New York Sun of December 1st, the Japanese Government is giving special attention to the protection of industries that have sprung up in Japan since the war. One of these is the Asahi glass factory, which is producing great quantities of sheet glass, some of which is being exported even to France. The output of the cellulose industry has been more than doubled. The war stopped the supply of paper from Europe to China and other Oriental countries, and Japanese mills have met the demand to the extent of \$2,163,490 a year, besides fully supplying their home demand. The domestic production of pulp has increased to more than 150,000 tons a year, and there are signs that the output will increase

PARTINGTON MILL SOLD.

One of the largest deals ever made in Canadian pulp plants was consummated a few days ago when the Bryant Paper Company of Kalamazoo and the Oxford Paper Company of Rumford Falls, Maine, closed a deal for the purchase of the Edward Partington Pulp and Paper Company, of St. John, N.B. The consideration was \$3,000,000, and culminated negotiations pending for more than three months. A total of 372,000 acres of land was involved.

The new company just organized is known as the Nashwaak Pulp and Paper Company, and offices will be maintained in New York City. Improvements on the mill property to the extent of \$250,000 will be made immediately insuring a capacity of 120 tons daily of sulphite.

NEW AMERICAN PULP CO.

E. B. Lindsey, of Boston; George Lewis, of Holyoke, Mass., and E. M. Blandin, of Bath, N.H., have organized the Aroostock Pulp Co., which is to erect at Van Zuren, Me., a plant to manufacture sulphate of Graft pulp, which is used in certain grades of brown paper and twine. The immediate investment will be \$5,000,000 and the plant will be in operation by next June, with a capacity of about 40,000 tons of Kraft pulp per annum.

UNITED STATES NOTES

(Special to Pulp and Paper Magazine).

NEW YORK, N. Y. Dec. 12th.

A bill designed to place a two years' embargo on exports of newsprint paper was introduced at Washington, December 6, by Representative Campbell, of Kansas, and referred to the commerce committee. Penalties ranging from fines of \$1,000 to \$20,000, and imprisonment of not less than ten years would be provided by the measure.

* * *

A press report from Worcester, Mass., says that the Rice, Barton and Iron Company has the contract to build two paper machines for the Gardner Paper Company, successor to the Anchor Paper Company, of Windsor Locks, which was burned a few months ago.

* * *

The Georgia Press Association has authorized the appointment of a committee to investigate the feasibility of inducing some of the large eastern mills to establish a paper mill in Georgia. Stress was laid on the necessity of collecting subscriptions in advance, the system used by the leading magazines.

* * *

The Carthage Sulphite Pulp and Paper Company, Carthage, N. Y., on Thanksgiving Eve presented to each of its 200 employees either a turkey or a \$2 bill as they elected. The company announces also that on Christmas each employee will receive a \$5 gold piece as a Christmas present. James A. Outerson is president of the company.

* * *

The Interstate Commerce Commission has decided that the rules and practices of railroads which provide storage for imported wood pulps at Baltimore, Philadelphia and Newport News, Va., for unlimited periods and without compensation in addition to the freight rates from those ports must be replaced by rules allowing only such free time as may reasonably be required from unloading or removal with reasonable charges for subsequent storage. The American Paper and Pulp Association complains that the present rules were unduly discriminatory and subjected that association and its members to unlawful prejudice and disadvantage. The association also contends that storage facilities enabled importers to carry large stocks without expense and gave opportunity for speculation to the detriment of domestic manufacturers and public generally.

* * *

G. P. Berkey, secretary of the Consolidated Water Power and Paper Company of Grand Rapids, which recently purchased the plant of the Interlake Pulp and Paper Company has been named general manager of the latter company as successor to William A. Fannon, resigned; E. B. Redford has been appointed to the position of assistant manager of the consolidated company at Grand Rapids, as successor to Mr. Berkey,

* * *

Newsprint investigators who have been at work for months in an endeavor to reduce the price of paper made their report on December 12 to the Federal Trade Commission. Manufacturers, jobbers, and publishers attended. The date was selected after conference with

officers of the American Newspaper Publishers' Association, paper makers, who attribute high prices to a scarcity of material, also were heard from.

* * *

The action of the International Paper Company in setting its 1917 price for newsprint at \$3.25, and placing new conditions on the consumer have been the subject of much discussion among newspaper publishers. Some believe that it is an unfair price and others believe the I. P. Company is justified in charging so much.

* * *

Japan has entered the industry of paper making on a scale that permits a large export of paper pulp to this country and India, according to Consul General Schidmore, at Yokohama, in a dispatch to the Bureau of Foreign and Domestic Commerce. He says that since the beginning of the war the industry has steadily increased and all circumstances favor its development after the cessation of hostilities. There are dense forests in Hokaido and Karafuto where, with cheap labor, it has been possible to produce a constantly increasing output. The timber used is said to be excellent and coal and sulphur are cheap and available with a short railroad haul. Mr. Schidmore says that Japan has the advantage of the Scandinavian countries in the production of wood, pulp and her export can therefore be relied on as a steady commodity.

* * *

G. H. P. Gould has sold the St. Regis Paper Company, Watertown, N.Y., to a group of Watertown men, most of whom were formerly interested in the mill. The syndicate is headed by David M. Anderson, formerly general manager of the St. Regis mill; Celestin C. Burns, Floyd L. Leslie, Frank A. Empsall, and D. C. Middleton. The sale will in no way affect the production of newsprint paper.

* * *

According to the preliminary report of the Federal Trade commission, the price of making paper for the first half of 1916 actually showed a decrease. Manufacturers based 1916 prices on the cost of the supplies that would enter into the making of their product, says a well known New York authority. When they made their contracts, they attached a piece of paper to it, as a sample, and specified that the sheet they would furnish would be as per sample. Then the paper makers complained that the price of dyes had gone up, and would continue to do so. Publishers did not insist on the product being in every respect as good as the sample. Yet in the face of all of this newsprint makers advance the cost of white paper 22c a ton, more than 50 per cent almost overnight, you might say. They have waited until the 1916 contracts have all but expired with but little more than a month to run before telling what they were willing to do next year. The publisher is helpless. When the manufacturer was helpless, if he was, the publisher did not hesitate to accept a portion of his burden.

DONNACONA PAPER CO. EXPANDS.

The Donnacona Paper Company of Donnacona, Que., is the latest Canadian mill to add a new paper machine in an effort to make production keep pace with consumption. Under the able management of Mr. George H. McKee the Donnacona Company, has made rapid strides since it started construction in 1912.

The Donnacona Paper Company, Limited, was organized to acquire and develop the water power and timber lands purchased by George H. McKee, general manager of the company, from John Forman, in August, 1912. It was incorporated under the laws of the Province of Ontario in the month of September of the same year, and was authorized to carry on business in the province of Quebec by special act of the Legislature in February, 1913.

The company's new machine is a Bagley & Sewall 160-inch machine and its installation will result in doubling the output of the plant. The company now has two fast running Bagley & Sewall machines with a combined capacity of 100 tons of finished news-print per day.

The company's ground wood mill is operating at the present time twelve grinders with a capacity of 75 tons per day, and six new grinders are being installed, which will be driven by two 1,200 horsepower electric motors. This will give a total daily capacity of 100 tons of ground wood. The sulphite mill has a capacity of 30 tons daily.

The company owns and leases timber lands approximately as follows: By lease of Crown land timber limits on the Jacques Cartier, 187 square miles and ownership of 17,500 acres of free-hold land, which wood is driven down the Jacques Cartier River direct to the company's dam. It also owns all of the stock of the Baie St. Paul Lumber Company, which company holds by lease from the Seminary of Quebec freehold lands of approximately 45,000 acres and by lease of Crown limits approximately 67 miles. The company purchased in March of the present year all the plant, property and riparian rights of the Jacques Cartier Pulp & Paper Company at Pont Rouge, and are now using this mill as a source of supply for a part of their mechanical pulp requirements in the Donnacona mill.

The affairs of the company are in the hands of the following board of directors: G. H. P. Gould, Lyons Falls, N. Y., president, who is also president of the Gould Paper Company, Lyons Falls, N. Y., and the St. Regis Paper Company, Deferriet, N. Y., and a well-known man in the paper-making business.

W. N. Kernan, New York, vice-president, who is also vice-president of the New York State Railways; C. B. Rogers, Utica, N. Y., secretary and treasurer, who is also president of the First National Bank, Utica, N. Y.; George M. McKee, general manager and managing director; F. K. Kernan, of the legal firm of Kernan & Kernan, Utica, N. Y.; H. P. Gould, Lyons Falls, N. Y.; M. Crouse Klock, Syracuse, N. Y., and D. C. Murray, Utica, N. Y.

Henry Ford's independent advertising campaign in behalf of President Wilson's candidacy was conducted in 500 newspapers at a cost of \$100,000.

* * *

Sweden will sell no more wood pulp to purchasers in the United States without a guarantee that the shipment will not be re-exported.

THE A. N. P. A. WANTS ROLL WIDTH INFORMATION.

(Special to Pulp & Paper Magazine).

The American Newspapers Publishers' Association says:—

"The very great desirability of standardizing widths of rolls leads to the hope that some material progress will be made in that direction during the coming winter. The decreased cost of production, should most newspapers combine in the use of three or a less number of standard widths would be so great that it would be certain to have its effect on the ultimate cost of news-print to the consumer.

"The table below indicates that 67-inch and 70-inch sizes are not only the most popular, comprising as they do approximately one-half of the total number reporting, but also it may be noted with interest they have increased far more rapidly during the past six years than has any other size.

"Will not publishers who may be interested in this attempt to secure further economy be good enough to communicate with the paper committee of the A. N. P. A. and state reasons why they prefer not to change to one of the two present standards, that is, 67 or 70-inch widths?

"There are advocates of the 66-inch width, and possibly of some other size at the present time used by but few publications.

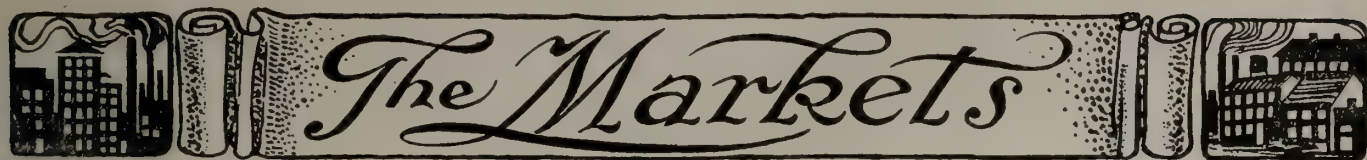
"This information is asked for the purpose of enabling the paper committee to make a study of the situation with a view to the selection of two or three standard widths.—R. W. J.

Widths of Rolls of Daily Newspapers.

	1911	1912	1913	1914	1915	1916
48 inches and under ...	66	69	82	83	89	90
61 to 65½ (inclusive) ..	9	9	7	11	15	22
66 inches... ..	36	44	46	52	59	54
66¼ to 66¾ (inclusive) 28	38	48	59	61	59	
67 inches... ..	225	243	248	264	263	272
67¼ to 67¾ (inclusive) 19	22	23	23	20	20	
68 inches... ..	92	92	89	84	86	80
68¼ to 68¾ (inclusive) 14	16	14	13	10	10	
69 to 69¾ (inclusive) ..	31	33	33	37	38	41
70 inches... ..	152	160	161	195	219	229
70½ to 72¾ (inclusive) 21	25	26	33	41	46	
73 inches... ..	14	17	23	28	38	44
73¼ to 75¾ (inclusive) 10	13	18	19	22	21	
76 inches and over ...	39	37	33	28	32	32
Totals	756	818	851	929	993	1020

MAIL ORDER HOUSES RETRENCH.

Movement to retrench in use of wrapping and other paper because of exorbitant prices is rapidly spreading to every industry. Increase in paper bill of Sears-Roebuck Co., of Chicago, will be \$1,000,000 next year. This company uses average of 20 tons of paper for its catalogues alone. All mail order houses are discontinuing fruitless circulation of catalogues and reducing the number of colored pages. National Cloak & Suit Co. has reduced its paper consumption greatly since beginning of the war. Department store men and other large users of wrapping paper are keenly interested in new methods of paper economy.



The Markets

(Special to Pulp & Paper Magazine.)

CANADIAN MARKETS

The newsprint situation does not show any improvement and some publishers are growing very anxious regarding the source of supplies for the coming year. Buyers of newsprint are constantly visiting Canada in the hope of securing relief and offering unheard of prices for car load lots, but meet with refusals on all sides. There are now propositions for several new plants in the newsprint line and a large concern was incorporated this week. It will erect a 150 ton mill while another project of equal magnitude is under way. The activity in pulp and paper stocks continues and two concerns have listed their securities since the last market report. They are the Abitibi Power and Paper Co. and the Provincial Paper Mills Co. The former has declared a quarterly dividend of one and three-quarter per cent on the preferred stock and the latter a quarterly dividend of one per cent on the common.

There are now nine Canadian pulp and paper companies who are offering their securities on the market and more will follow. The public is clamoring for the stock and there is danger that discretion may be thrown to the winds in the rush for shares.

One leading promoter this week stated that the abnormal figure for paper of all kinds was a flattering inducement for capitalists to invest in ventures of this character, but the excessive cost of labor, building material and the high values for all paper mill equipment held some back. They know that a new mill cannot be completed in less than a year and a half and when the product is ready for the market another state of affairs may prevail. It is prophesied that within ten years at the present rate of development that production of newsprint in Canada will exceed the present tonnage in the United States. In the meantime the earnings of operating mills are enormous and the feeling is prevalent that newsprint will never again be as cheap as it was at the commencement of 1916. The paper trade contends that costs are bound to increase in the future because of the scarcity of labor and the shortage of ground wood pulp which threatens to become alarming. The additions to Canadian paper plants now under way will increase the output by six hundred tons before many months are over.

Ground wood is bringing from forty dollars up at the mill and inquiries are being turned down every day. One firm has made a contract at forty-five dollars delivered for the coming year in the middle west states. The plant of the Monteith Pulp and Timber Co., at Monteith, Ont., has been closed down for the winter. Last year the company took out some fifteen thousand cords of pulp wood, but this winter owing to the scarcity of labor and the high prices for supplies they will not take out any although they expect several thousand cords will be delivered to them to be rossed in the spring. Sulphite pulp remains stationary in prices. There have been some supplies coming

in from across the water, but most of it is on contract.

Book and writing mills are rushed with business and although there has been another advance from half a cent to one cent the demand still keeps up. There is no relief in sight although the Provincial Paper Mills Co. will erect a new mill at Mille Roches, Ont., during the coming year and install two machines of 148 inches width, which will give them an increased output of 50 tons.

Owing to the scarcity of raw stock and the heavy requisitions there has been another advance of a cent on coated papers, No. 1 is now selling at 13¼ cents, No. 2 at 12¼ cents, and No. 3 at 11½ cents. Tints are bringing 13½ cents, suede white 13 cents, suede India 14 cents, and suede grey 14½ cents. Jobbers report that business which generally falls off to a certain extent at this time of the year, is keeping up remarkably well and December returns are likely to exceed any previous corresponding month. Many of the paper houses will take stock during the next few weeks, and the volume of business for the closing twelve months will be the highest ever known. This, of course, is accounted for by the abnormal prices which show no sign of a let up although manila, fibres and kraft have touched a point not known in the previous history of the trade. The outlook is considered anything but encouraging for any decrease in quotations or relieving the shortage. Many warehouses are cleared out of certain lines and stocks were never at so low a mark. The number of orders that have to be turned down on special papers is realized only to publishers and printers when they seek to obtain fresh supplies.

The United States is taking steps to protect its supply of paper newsprint as a bill designed to place a two years embargo has been introduced in Congress and referred to the commerce committee. Heavy penalties are provided by the proposed measure. The Canadian Press Association has issued a bulletin asking all publishers to cut off exchanges and free copies in the interest of conservation. The number of weeklies who have raised their subscription price is increasing rapidly. By the end of the year fully one half of the weekly men will be getting a dollar and a half for their mediums. There have been rumors to the effect that the Association was thinking of buying a paper plant to relieve the threatened situation, but there is no foundation for the report. Some of the larger concerns in the publishing line are talking of pooling their interests in the hope of acquiring a news mill, but just how far the project will take shape remains to be seen.

In reference to color the situation does not improve and one firm has sent out notice changing its method of charging for colors. After paper is charged on invoice, one cent is added for color in place of the method which they have been using.

In regard to the general paper situation a western paper dealer says that he could do far more business if he could get the stock required. Before the war he

imported many special lines from the Old Country, and has been able to replace only a few of these. While Canadian mills have done something in this direction they have not been able to do much owing to the market for the more staple lines, so to speak, being so heavy. All Canadian plants which have turned to specialties have found a ready acceptance of their offerings and in the near future genuine vegetable parchment paper will be offered while another mill is preparing to produce glassine.

The printing business is one of the hardest games to-day, and many establishments will likely go down and under owing to scarcity of help and the high figure for stock. There is one satisfaction, however, and that is the price cutter is being eliminated and the trade put on a sounder footing. More publishers are anxious to get a remunerative return for their work than ever before.

The following are the Toronto prices:

Paper.

News (rolls) \$3.00 up, at mill, in carload lots.	
News (sheets), \$3.75, at mill, in carload lots, smaller lots higher.	
Book papers (carload), No. 3.....	\$7.50
Book papers (ton lots), No. 3.....	\$8.00 to \$8.50
Book papers (carload), No. 2.....	\$8.75 to \$9.50
Book papers (ton lots), No. 2.....	\$9.75 to \$10.25
Book papers (carload), No. 1.....	\$9.25 to \$10.00
Book papers (ton lots), No. 1.....	\$10.00 to \$11.00
Sulphite bonds.....	12½¢ up
Writings.....	9½¢ up
Grey Browns.....	\$4.25 to \$5.00
Fibre.....	\$7.25 to \$8.50
Manila, No. 1.....	\$7.25 to \$8.50
Manila, B.....	\$5.00 to \$6.50
Unglazed Kraft.....	\$8.50 to \$11.00
Glazed Kraft.....	\$9.00 to \$11.00
Tissues, bleached.....	\$1.60 to \$2.30
Tissues, (manila or white sulphite).....	\$1.20 to \$1.60
Tissues, cap.....	80¢ to \$1.15
Natural, greaseproof.....	13¢ to 18¢
Half Bleached Greaseproof.....	15¢ to 19¢
Bleached greaseproof.....	17¢ to 21¢
Genuine Vegetable Parchment.....	25¢ to 30¢
Drug papers, whites and tints.....	10¢ to 13¢
Paper bags, Manila.....	20% discount
Paper bags, kraft, list prices increased	
50% with.....	35% discount
Confectionery bags, list prices increased	
50% with.....	25% discount

Pulp.

F.O.B. Mill.

Ground woodpulp.....	\$40 to \$45
Easy Bleaching Sulphite.....	\$110.00 to \$120.00
Sulphite, news grade.....	\$100 to \$110
Sulphite (bleached).....	\$160.00 to \$180.00
Sulphate.....	\$120.00 to 125.00

The rag and paper stock market is active in some lines and dull in others. There has been an advance in soft and hard shavings, white blanks and magazine stock. Not much change is expected until after the first of the year. The following prices now prevail, f. o. b. Toronto.

No. 1 hard white shavings.....	\$5.50
No. 1 soft white shavings.....	4.50
No. 1 mixed shavings.....	1.00
White blanks.....	1.85
Heavy ledger stock.....	3.00

Soft ledger and writings.....	1.50
No. 1 magazine.....	2.05
No. 1 book stock.....	1.95
No. 1 manila envelope cuttings.....	2.60
No. 1 print manila.....	1.00
Folded news.....	.90
Over issues.....	1.00
Kraft.....	3.25
No. 1 clean mixed paper.....	.80
Old white cotton.....	4.65
Thirds and blues.....	2.85
No. 1 white shirt cuttings.....	7.00
Black overall cuttings.....	2.75
New light flannelettes.....	5.25
Ordinary satinettes and flock.....	1.80
Tailor rags.....	2.00

MONTREAL MARKETS.

Book—News—Writing and Posters.

Roll News, \$3.00, f.o.b. mill, for carloads proportionate increase on small lots.

Sheet News, \$3.50 to \$3.75, at mill carloads, \$3.75 up for small lots.

No. 1 Book, 7.50 to 8.25.

No. 2 Book S.C., 6.50 in large quantities; 7.25 in small quantities.

No. 3 Book F.M., 6.00 in large quantities; 6.75 in small quantities.

Writings, \$8.00 to \$10.00.

Writing Manila, 6.95.

Cover papers, 11 to 14½¢, according to colors wanted.

Colored Poster, 6½ to 7½¢.

An extra charge of 10¢ per 100 lbs. will be made when Book Papers are packed in frames, and 15¢ per 100 lbs. when packed in cases.

Wrapping Papers.

The following are the new prices on wrappings, effective immediately:

	Car lots.	1-ton lots.	Small lots.
Beaver, Brown wrap 100 lbs..	4.00	4.25	4.60
No. 2 Manila (present stock)			
100 lbs.	4.00	4.25	4.60
Samson B., 100 lbs....	5.25	5.60	6.00
No. Manila, Invincible Fibre,			
100 lbs.	5.50	5.85	6.25
Fibre lighter than basis 24x36—40. down to 24x36—30, 5 per cent extra. This is in addition to the usual extra.			
White Wray, Cleaver, 100 lbs...	3.40	3.65	3.90

NEW YORK MARKETS.

New York, N. Y., Dec. 8, 1916.

In some circles, where profound wisdom is thought to be supreme, the hint is given, somewhat gently, that conditions have reached their zenith, or are about to do so. They maintain that there is a limit to everything, regardless of what the need may be and they feel that conditions in the paper industry have about reached their limit. The prices being asked at the present time are, without doubt, ridiculously high, when compared to the figures which were quoted about a year and a half ago — much higher than even the most foresighted in the local trade ever deemed it possible that they could ever reach. Just in what way

the market will be forced to quit its ascending tendency, is not stated or even intimated. It is merely said that these prices will not be paid. It is a case where our readers will have to draw their own conclusions, for the present, at least.

It is certain that, from no way of reasoning, can it be assumed that ground wood pulp has reached its highest mark, even though it is said that sales have been made at over \$40 per ton, at the mill. The grinders are working their machines to the best capacity they can, but as we have explained in previous issues, it is not always possible to get the production which is desired. Water reports from different parts of the country are far from encouraging, for in many sections, the power has become so poor, through low water, that the machines can be run only irregularly. The demand is as strong as ever. The pulp men are inclined to believe that the demand has taken on greater proportions, but this may be because they are so utterly unable to cope with the situation. It is not believed likely that the fact that the storage stocks of newsprint are beginning to show a better aspect will have any real effect on ground wood. So much of this pulp is being used to substitute, as far as can be done, or as far as the trade will stand for it, sulphite, that the demand will most likely continue for some time to come.

The sulphite market maintains its strength and the prospects are that it will continue to do so over the winter. This is due in part to two causes: First, that it is expected that even less pulp will be imported than has been the case for the past several months, owing to the closing of navigation on the Baltic Sea, and, second, because the paper mills will have sufficient orders to keep them operating at capacity throughout the next six or seven months, if not more. Little hope can be placed in the supply from the domestic manufacturers. They have little to offer, having sold ahead their output for some time. While, from time to time, there will be a slight addition to the production in the United States market, it will not be sufficient to ease matters at all. It is hoped that Canada may be able to do more in the way of sending in pulp than she has been doing, which is, by the way, a big increase over normal periods, but there is no certainty in this respect. Local men say there is always the danger of Great Britain commandeering considerable of their stock for her own use. Then again, it is known that the Canadian government is planning to conserve its supplies, for the present, to avoid the appearance of an acute situation. It would be difficult and almost unjust to place a quotation for imported bleached sulphite. Importers talk of 10c and 11c and of higher. While it is questionable that anyone has paid these prices, it seems true that the stock cannot be obtained for much less. Domestic bleached is quoted at 7½c to 8c. This is, of course, "skyhigh," but even at this figure there does not appear to be any abundance of stock floating about, if we are to believe the handlers. Easy bleaching is strong at about 6¼c, with a noticeable scarcity. Foreign unbleached is reported at 5¾c, while the domestic is said to be moving 4¼ to 5c. Bleached soda pulp is strong and, it is believed, may go considerably higher in the near future. It is now at about 5¾c. Krafts have not changed. They are still in good demand, with an acute shortage of stock to meet the general needs. The market stands at about 6½c, or a little higher.

Rags are moving along in a rather eventless fashion. There is steady buying on the part of the mills, but there has been no opportunity for any ascension. No material change is expected within the next month or so, but one can never tell, for a boom in roofing rags would alter the whole story. Dealers never tire of repeating the way roofing acts on the market, and there is no doubt that they are right, provided the demand for roofing takes on enough proportions to "eat up" some of the better grades of rags. New white shirt cuttings are holding at about 9c; fancy shirts, at 6½c; old whites, No. 1, at 5½c; house soiled whites, at 4½c; street soiled, at 3½c; thirds and blues, at about 3c; black stockings, at 3c.

Bagging does not seem to be able to take on any life. In fact, it has been a big disappointment to the dealers, for, they figured at the time when England first placed the export embargo on this commodity, that it would rise in price and that a consequent demand would be the result. But no such state of affairs has existed, and the market is reported rather dull. Rope is fairly strong at between 5½c and 6c.

Judging from the present demand and from the reports gleaned about the town, it is inevitable that the prices on waste papers of practically every sort will advance materially over the current figures within the near future. Where formerly the board mills were the only buyers, or the greatest buyers of waste papers, practically the largest part of the manufacturers of the different grades are now bidding for this stock, causing a shortage and boosting the quotations? Hard white shavings are going for between 5c and 6c; soft white shavings, at about 4¾c; magazines, at 2½c; ledger stock, at waste white news is selling at nearly 1¾c; krafts, are up to 3½c; mixed papers are going at 80c per hundred pounds.

The soaring tendency is still noted in the paper market, for notice of advances still seem to be a common affair. In most of the various grades, the mills are chock-a-block full of orders and claim to be in a position to continue at capacity for several months, even if they were not to receive another order within that time. There is, at the present time, a movement throughout the country, on the part of the department stores and the other large consumers of paper, to economize in the use of this commodity, by eliminating the numerous causes for waste. No doubt this will have some sort of an effect on the market, though it is yet too early to predict how much this effect will be. In newsprint, the opinion seems to be that the zenith has been reached and that there will be a slight opportunity to gather together some storage stocks though, for a time, these cannot possibly amount to very much. So far as the consumers are concerned, the critical period has been passed. The making of the contract price for the coming year, at 3.10c, f. o. b. mill, has cleared matters a little, for there was considerable speculation as to what would be done by the manufacturers. This price, it is believed, will force the newspaper publishers to make their methods in the reduction of consumption be more effective than ever. In writing papers, an excellent demand is reported for all grades. It seems almost impossible to get cheap bonds, for, on these, the mills are sold far ahead and are constantly turning away good-sized orders. The same applies to all grades of wrappings—manilas, fibres and the like. The plants are working at capacity, but do not seem to be able to catch up with the demands from consumers. Tissues are very strong and

still facing upwards. There seems to be a great deal of difficulty in getting anything in the way of large-sized orders from the mills at any price.

No term is able to describe the situation in boards. All of the board mills are working at capacity, under a demand that seems to be endless. Prices are higher to-day than they were, because with the coming of the holiday season, there is an added demand. No relief appears in sight for this market.

R. W. JOLLY.

Foreign Bleached Sulphite, ex-dock, N. Y., 10c and higher.

Domestic Bleached Sulphite, f. o. b., mill, 8c.

Foreign unbleached, ex-dock, N. Y., 5 $\frac{3}{4}$ c.

Domestic unbleached, f. o. b., mill, 5c.

Easy Bleaching, f. o. b., mill, 5c.

Kraft, f. o. b., mill, high as 7c.

Bleached Soda Pulp, f. o. b., mill, 5 $\frac{1}{2}$ c to 6c.

Ground Wood Pulp, f. o. b., mill, \$40.00 to \$43.00.

Paper.

News (rolls) at mill, in carload lots, \$3.10 and up.

News (sheets) at mill, in carload lots, \$4.25 and up.

News, from jobbers, as high as 5 $\frac{1}{2}$ c.

Book Papers (carloads) No. 3, 8c.

Book Papers (ton lots) No. 3, 9c.

Book Papers (carloads) No. 2, 9 $\frac{1}{2}$ c.

Book Papers (ton lots) No. 2, 10c and up.

Book Papers (carloads) No. 1, 10 $\frac{1}{4}$ c and up.

Book Papers (ton lots) No. —, 11c and up.

Sulphite Bonds, 9c and up.

Writings, 11c and way up.

Ledgers, 12c and way up.

Fibres, \$4.75 to \$6.00.

Manilas No. 1, 7c and up.

Manilas, No. 2, 5c and up.

NEWFOUNDLANDS PAPER EXPORTS.

In 1913, a normal pre-war period, Newfoundland supplied Great Britain with news paper (on reels) to the extent of 17.4 per cent. of the total imports. On the other hand, in 1915, a full year of war, paper on reels showed a total decrease of nearly 30,000 tons — the total imported being 106,720 tons. Of this quantity Newfoundland contributed 44.7 per cent. Thus, for the first time in the history of the paper trade, Newfoundland took a premier position as an exporter to Great Britain of paper on reels—the total amount being 47,789 tons, or 15,410 tons in excess of those of Norway.

The following figures show the export of paper and pulp since the industry first began:—

Year.	Paper.		Pulp.	
	Tons.	Value. £	Tons.	Value. £
1910	7,900	73,000	6,900	14,000
1911	21,100	197,000	27,200	52,000
1912	26,800	250,000	42,100	75,000
1913	44,400	415,000	57,500	91,000
1914	40,077	374,000	51,605	77,645

BRITISH IMPORTS FURTHER RESTRICTED.

Beginning January 1st the imports into Great Britain of materials for paper manufacture will be on the same footing as paper, such imports to be reduced by one-half instead of one-third as at present. Licenses already granted for imports for January and February are to be reduced accordingly.

ANOTHER SIDE TO "MORE PRODUCTION."

The repeated cries for "more production" in order to enhance the wealth of Canada are apt to cloud the fact that prevention of waste by Governments themselves is the most direct and obvious means of filling the country's purse.

When one knows that the Governments issuing the admonition are themselves fully empowered to eliminate waste in such assets as agricultural and forest lands, the proposition to fill a leaky pail loses some of its reasonableness.

Ontario's forest fires this year represented a straight loss of 3 to 5 million dollars in the Claybelt alone, counting only the immediate property damage. The fires in Quebec certainly will show a substantial financial injury. Were all the provinces and the federal government to add their forest fire debits, after a complete and frank survey of destroyed areas, the result would illustrate the awkwardness of trying to make an extra million out of wheat and at the same time tossing away its equivalent in preventable forest fires.

The growing forests represent the easiest money Canada ever will lay her hands on. No less than seven and a half millions a year are paid into provincial and federal treasuries each year from timber operations. Five thousand industries look to living forests for their supplies. Our mines, fisheries, agriculture, are helpless without the co-operation of a cheap wood supply. When we abandon the guardianship of this precious pillar of our prosperity to the fire fiend himself, we betray the interests of present and future.—Canadian Forestry Journal.

TREMENDOUS WASTE OF WOOD.

There are more than 48,000 sawmills in the United States, and their output of waste in the form of sawdust, shavings, slabs, and other wood refuse is estimated as 36 million cords per year. This is equal to over 4 $\frac{1}{2}$ billion cubic feet of waste, which is the capacity of a bin one-half mile high with a base covering a forty-acre lot. Or, considering each cord to contain eighty cubic feet of solid wood with all the cracks and air spaces taken out, these 36 million cords would make a block of wood more than a quarter of a mile on each edge.

Perhaps one-half of this so-called waste product is not, strictly speaking, wasted, but serves a useful purpose as fuel under the boilers. Much of the remaining 18 million cords not only serves no useful purpose, put in most cases is a source of inconvenience and danger, and costs the mill time and money.

LUMBER AND ITS USES.

The College of Agriculture of the University of California announces a correspondence study course on "Lumber and Its Uses," to be given under the direction of the Division of Agricultural Education. This course, which is prepared by Prof. M. B. Pratt of the Division of Forestry, is planned to be of value to all persons having to do with lumber. It deals particularly with lumber produced on the Pacific coast, the general nature of the assignments being as follows: The Structure of Wood; Physical Properties of Wood; Mechanical Properties of Wood; Standard Grades and Sizes; Structural Timbers; Seasoning of Timber; Wood Preservation; The Finishing and Fireproofing of Wood; Lumber Prices and Cost of Construction; Specific Uses and Qualities of Western Woods.

CANADA



NATIONAL SERVICE

PUBLIC NOTICE is hereby given under the authority of the "War Measures Act, 1914," that during the first week in January, 1917, an inventory will be made by the Post Office Authorities, of every male between the ages of sixteen and sixty-five, residing in Canada.

National Service Cards and addressed envelopes for their return to Ottawa have been placed in the hands of all Postmasters for distribution amongst the persons required to fill in such cards. Every male person of the prescribed ages is required to fill in and return a card enclosed in an envelope within ten days of its receipt.

Any person who fails to receive a card and envelope may obtain the same upon application to the nearest Postmaster.

R. B. BENNETT,

Director General.

Ottawa, 15th December, 1916.

THE NATIONAL SERVICE CARD

- | | | | |
|---|--|---|--|
| 1. What is your full name? | | 2. How old are you? years. | |
| 3. Where do you live? Province..... | | 5. In what country were you born? - - } | |
| 4. Name of city, town, village or Post Office } | | 6. In what country was your father born? } | |
| Street..... Number..... | | 7. In what country was your mother born? } | |
| 10. How much time have you lost in last 12 months from sickness? } | | 8. Were you born a British subject? | |
| 11. Have you full use of your arms? | | 9. If not, are you naturalized? | |
| 12. Of your legs? | | 15. Which are you—married, single or a widower? - } | |
| 13. Of your sight? | | 16. How many persons besides yourself do you support? } | |
| 14. Of your hearing? | | | |
| 17. What are you working at for a living? | | | |
| 18. Whom do you work for? | | | |
| 19. Have you a trade or profession? | | | |
| 20. If so, what? | | | |
| 21. Are you working now? | | | |
| 22. If not, why? | | | |
| 23. Would you be willing to change your present work for other necessary work at the same pay during the war? | | | |
| 24. Are you willing, if your railway fare is paid, to leave where you now live, and go to some other place in Canada to do such work? | | | |

GOD SAVE THE KING

TORONTO AS A PRINTING CENTRE.

Outside of a limited circle, few in this country, or indeed in the United States, have any idea where Toronto stands among the big printing centres of America. Taking Toronto's population at 500,000, and this figure is slightly beyond the market owing to the war, there is more printing manufactured, newspaper and book job combined, than any other city on the continent. The following numbers of compositors in each city of the first seven are taken from the "Typographical Journal". Greater New York, 7,586; Chicago, 4,486; Greater Boston, 1,848; Washington, 1,756; St. Louis, 1,215; Philadelphia, 1,135; Toronto, 1,077. New York City has a population of approximately 5,000,000; Chicago, 2,200,000; Greater Boston, 1,200,000; Washington, 400,000 the United States Government printing office being located there a comparison would be unfair; St. Louis, 700,000; Philadelphia, 1,600,000; Toronto, 500,000.

San Francisco follows Toronto with 980 compositors and a population of 450,000. It has been a close race between 'Frisco and Toronto for seventh place in point of numbers and first place in proportion to population as a printing centre of the North American continent. Cleveland has 751 compositors and a population of 650,000; Cincinnati, 610 compositors and a population of 400,000; Detroit, 704 compositors and a population of 600,000; Pittsburg, 736 compositors and a population of 1,000,000, which includes Allegheny and suburbs; Buffalo, 496 compositors and a population of 500,000. What might be called Greater Montreal has 568 English compositors and 227 French compositors, and a population of 700,000.

WANTED

Second-hand ground wood mill equipment to include grinders, wet machines, pumps, hydraulic presses and if possible, turbines adaptable to 20 feet head.

MONTREAL ENGINEERING CO., LIMITED,
164 St. James St., - - - Montreal.

Tenders for Pulpwood and Pine Limit.

Tenders will be received by the undersigned up to and including the 1st day of February, 1917, for the right to cut pulpwood and pine timber on a certain area situated on the Black Sturgeon River and other territory adjacent thereto, in the District of Thunder Bay.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 40 cents per cord for spruce, and 20 cents per cord for other pulpwoods, and \$2.00 per thousand feet, board measure, for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

Such tenderers shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario.

Parties making tender will be required to deposit with their tender a marked cheque payable to the Honorable the Treasurer of the Province of Ontario, for ten thousand dollars (\$10,000), which amount will be forfeited in the event of their not entering into agreement to carry out conditions, etc. The said \$10,000 will be applied on account of bonus dues as they accrue, but the regulation dues, as mentioned above, will require to be paid in the usual manner as returns of cutting of wood and timber are received.

The highest or any tender not necessarily accepted.

For particulars as to description of territory, capital to be invested, etc., apply to the undersigned,

G. H. FERGUSON,

Minister of Lands, Forests and Mines.
Toronto, 1916.

Do You Know That

Clafin Continuous Beaters

Do better Beating and Brushing than Tub-beaters, and that you can save $\frac{1}{3}$ of the cost, $\frac{1}{2}$ the power, and $\frac{1}{4}$ of your floor space, by using them?

They Work Successfully on all Kinds of Stock

Write for full information

THE CLAFLIN ENGINEERING COMPANY,
LANCASTER, OHIO

Agents—Laurie Machinery Co., Limited, Montreal.

Beveridge Paper Company, Limited

Mill Agents

MONTREAL.

Mill Supplies

PROTECTO and PROTECTOCOAT

BOILER PRESERVATIVES are unlike anything else on the market and we can show you testimonials from the largest paper mills in America and five reasons why they will save you 25 per cent or more on your fuel bill, without polluting your steam.

Agents for LOCKPORT FELT CO'Y.

Lockport Woolen Superfine Wet and Press Felts.
Fine felts for fine papers.

Best felts for all papers.

A trial will convince you that they mean the minimum cost per ton paper made and that is what counts.

Satisfaction guaranteed.

Everything in Vulcanized Fibre including Receptacles, Trucks, Gears, etc.

CANADIAN WOOD PULP

WANTED

FOR ITALY

A permanent business in Canadian Pulp can be established in Italy if the proposition is tackled at once while the Scandinavians are out of the market.

*We require an agency
for
All Grades of Wood Pulp for Italy.*

We have our own office in Italy and perfect
selling organization, which is at your ser-
vice.

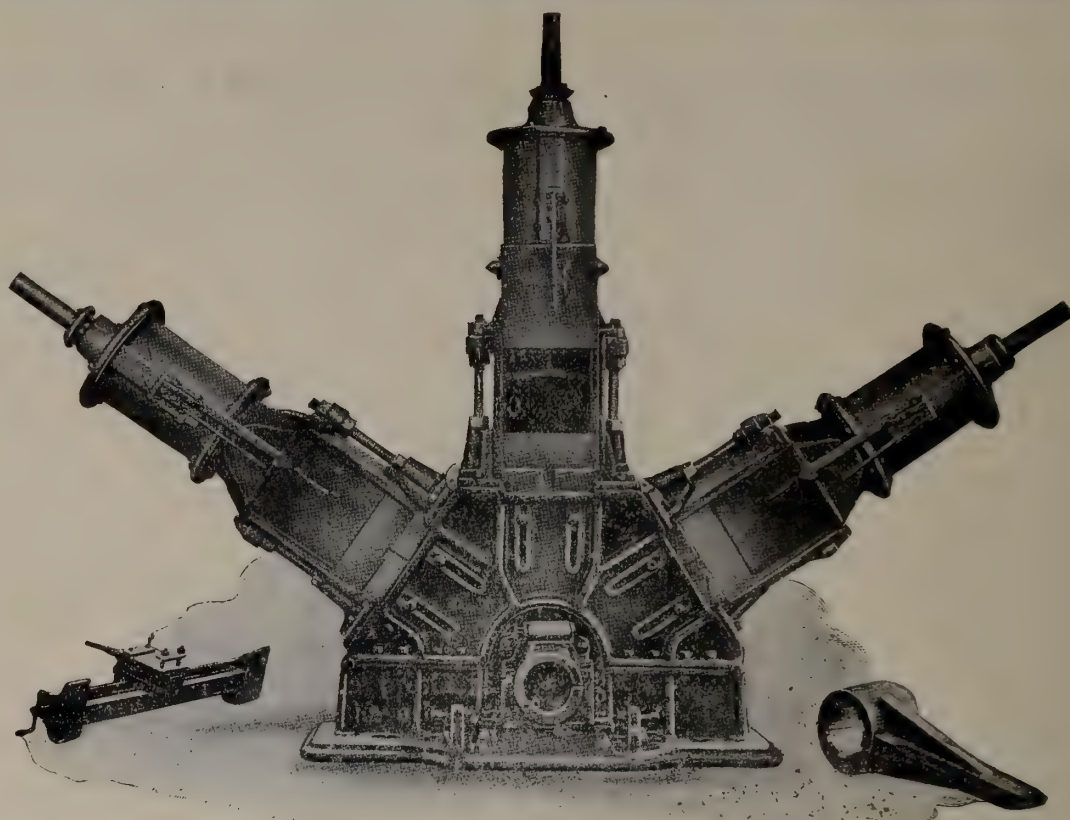
MANN & COOK

27 ST. MARY AXE, LONDON, E.C.

ENGLAND

Cables: "OILINESS," London.

Codes: A.B.C. Fifth Edition, Lieber's Standard, Western Union, Etc.



PULP GRINDERS

In Sizes for 24", 30", and 32" Wood

Our Other Lines of Manufacture Include

BRONZE DIGESTER & ACID SYSTEM FITTINGS

BRONZE BLOW-OFF VALVES

P. & M. ROTARY SCREENS (Using Slotted Plates)

PAULL ROTARY SULPHUR BURNERS

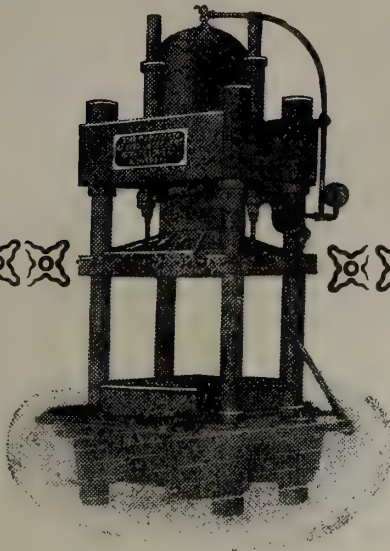
Record Improved Quick Opening Valves

in Sizes 3" to 20"

MADE OF CAST IRON, BRONZE AND ACID METAL.

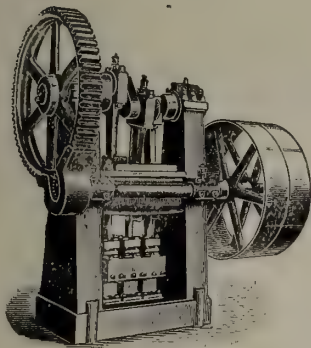
CANADIAN PULP MILL MACHINERY CO., LIMITED

18 TANSLEY ST. - - MONTREAL

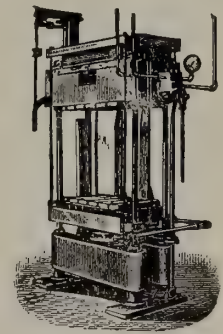


Sulphite, Sulphate and Groundwood Manufacturers

If you are Pressing Less than 60% Dry,
We Can Save you Money.



Hydraulic Presses,
Pumps,
Balers and Accumulators



For All Purposes Where Pressure is Required.
Parts always Carried in Stock.

Full information on request.

CANADIAN BOOMER & BOSCHERT PRESS CO., LIMITED

18 TANSLEY ST.,

-

-

MONTREAL

Operate Your Plant

at

Maximum Efficiency

Pulp and Paper Mills, particularly under present conditions, require that the power generated be transmitted without loss to the various machines. Present demand and prices make it absolutely essential that there be no lost power, and **AMPHIBIA** leather belting will transmit your power without loss, even on your Fourdriner Machines, Jordans, Beaters, etc., where the variation of load makes the service severe.

AMPHIBIA

Is the result of 40 years close study of the tanning and manufacture of leather belting. **AMPHIBIA** is produced under the strictest inspection, every joint is as rigid as the leather itself. The finish makes the belting grip the pulley and prevents slipping, guaranteeing no lost motive power.

"Leather like gold has no substitute."

THE GREAT AMPHIBIAN

An attractive little booklet, written by the Right Hon. Winston Churchill, dealing with the story of Britain's double defence against Prussian oppression sent free for the asking. It's well worth reading. Send for your copy to-day, as the supply is limited.



Sadler & Haworth

Tanners and Manufacturers of Leather Belts for 40 years

TORONTO

38 Wellington St. E.

MONTREAL

511 William St.

VANCOUVER

107-111 Water St.

ST. JOHN

149 Prince William St.

WINNIPEG

Galt Building

To insure satisfaction state where belt is to run.

INDEX TO MILL SUPPLIES

This Directory is published to facilitate the work of our readers, in the mills. If the information sought is not found, an invitation is extended to communicate with the editor, who will gladly be of all assistance possible.

Acidproof enamel:
Spielman Agencies Regd., Montreal, Que.

Acid Systems:
Advance Engineering Co., Ltd., Toronto, Ont.
Darling Bros., Montreal, P. Q.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Air Compressors:
Fraser, W., Montreal
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.

Alum:
Kalbfleisch, Franklin & Co., New York.

Aluminium:
Spielman Agencies Regd., Montreal, Que.

Barkers:
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Voith, J. M. Co., Inc., New York, N.Y.

Bearings:
Goldie & McCulloch Co., Ltd., Galt, Ont.

Beaters:
Bertrams Ltd., Edinburgh, Scotland.
Clafin Eng. Co., Lancaster, Ohio.
Emerson Mfg. Co., Lawrence, Mass.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Marx & Co., J., London, England.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.

Belting:
Canadian Fairbanks-Morse Co., Ltd., Montreal, Canada.
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Dominion Belting Co., Hamilton, Canada.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
Main Belting Co. of Can., Ltd., Montreal, Que.
Sadler & Haworth, Montreal.

Belt Conveyors:
The Jeffrey Mfg. Co., Montreal, Que.

Bleaching Powders:
Hooker Electrochemical Co., Wall St., New York, N.Y.
Klipstein, A. & Co., Ltd., Montreal, Canada.

Bleach Systems:
Advance Engineering Co., Ltd., Toronto, Ont.

Blowers:
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Sherbrooke Machine Co., Sherbrooke, Que.

Boilers:
Goldie & McCulloch Co., Ltd., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Boilers—Water Tube:
Babcock & Wilcox, Ltd., Montreal, P. Que.
Goldie & McCulloch Co., Ltd., Galt, Ont.

Brass Wire Cloth, Fourdrinier Wires:
Capital Wire Cloth and Mfg. Co., Ltd., Ottawa, Ont.
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, St. Henry, Montreal, Canada.
Taylor, James, St. Francois Xavier Street, Montreal, Canada.
Westbye, P. P., Peterboro, Canada.

Cable Conveyors:
The Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Calender Rolls:
Bertrams, Ltd., Edinburgh, Scotland.
Farrel Foundry and Machine Co., Ansonia, Conn.

Carriers:
Northern Crane Works, Walkerville, Ont.

Cars, Dump and Flat:
Canadian Equipment Co., Montreal.
Fraser, W., Montreal
Sessenwein Bros., Montreal

Casein and Satin White:
Kalbfleisch, Franklin & Co., New York.

Castings:
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Ottawa Car Mfg Co., Ottawa, Ont.
McAvity T. & Sons, Ltd.

Chain Crane:
Northern Crane Works, Walkerville, Ont.

Chain Blocks:
The Jeffrey Mfg. Co., Montreal, Que.

Chain Conveyors:
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chain Drives (Silent and Steel Roller):
Jones and Glassco, St. Nicholas Building, Montreal.

Change Speed Gears:
Jones and Glassco, St. Nicholas Building, Montreal.

Chemicals, Colors, Etc.:
Klipstein, A. & Co., Montreal, Canada.
Hooker Electrochemical Co., New York, N.Y.
Paper Makers' Chemical Co., Easton, Pa.
Tippet, A. P. & Co., Montreal, Canada.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chimneys:
Canadian Kellogg Co. Ltd., New York.

China Clay:
China Clay Co., Manchester, England.
Klipstein, A. & Co., St. Peter Street, Montreal, Canada.
Paper Makers' Chemical Co., Easton, Pa.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada.

Chippers:
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Disintegrators:
The Waterous Engine Works Co., Limited, Brantford, Ont.

Chip Screens:
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Clutches:
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jones and Glassco, St. Nicholas Building, Montreal, Canada.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Coal and Ash Conveyors:
Babcock & Wilcox, Ltd., Montreal, P. Q.

Condensers—Barometric:
Canadian Kellogg Co. Ltd., New York.
Goldie & McCulloch Co., Ltd., Galt, Ont.

Conveying Machinery:
Caldwell, H. W. & Son Co., Chicago, Ill.
Jeffrey Mfg. Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Walkerville, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Couch Rolls:
Bertrams Ltd., Edinburgh, Scotland.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Counter Shaft Fixtures:
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Couplings:
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cranes:
Canadian Equipment Co., Montreal.
Northern Crane Works, Ltd., Walkerville, Ont.
Smart-Turner Machine Co., Hamilton, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cranes—Electric:
Babcock & Wilcox, Ltd., Montreal, P. Que.

Cranes—Hand Power:
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cranes—Overhead Travelling:
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.

Cut Gears:
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones and Glassco, St. Nicholas Building, Montreal.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.

Cutters:
Bertrams, Ltd., Edinburgh, Scotland.

Cylinders:
Bertrams, Ltd., Edinburgh, Scotland.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Covers:
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Moulds:
Bertrams Ltd., Edinburgh, Scotland.
Sherbrooke Machinery Co., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Cylinder Rolls:
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.

Dandy Rolls:
Capital Wire Cloth and Manufacturing Co., Ltd., Ottawa, Ont.
Johnson & Sons, C. H., St. Henry, Montreal, Canada.

Diffusers:
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.

Digesters:
Canadian Kellogg Co. Ltd., New York.

Digester Fittings:
McAvity T. & Sons, Ltd.

Digester Lining:
Advance Engineering Co., Ltd., Toronto, Ont.
Panzl Digester Lining Co., Muskegon, Mich.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.

Dryers:
Bertrams, Ltd., Edinburgh, Scotland.

Electrical Specialties:
Spielman Agencies Regd., Montreal, Que.

Enamels, machine:
Spielman Agencies Regd., Montreal, Que.

Engines:
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.

PULP AND PAPER MAGAZINE

MILL SUPPLIES---Continued

- Evaporators:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada
Scott, Ernest & Co., Fall River, Mass.
- Exhausters:**
The Sherbrooke Machinery Co., Sherbrooke, Que.
- Experimental Machinery:**
Process Engineers, Ltd., Montreal, Canada.
- Exporters:**
Parsons Trading Co., New York, N.Y.
- Felts:**
Ayers, Ltd., Lachute Mills, Que.
Bates & Innes, Ltd., Carleton Place, Ont.
Huyck, F. C., Albany, N.Y.
Johnson C. H. & Sons, St. Henry, Montreal, Que.
- Filters:**
Darling Bros., Montreal, P.Q.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.Q.
- Friction Hoists:**
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M. Co., Inc., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Gauges:**
Darling Bros., Montreal, P.Q.
- Gears:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Grate Bars:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Grinders:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Hangers:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Hand Power:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
- Heaters:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Helicoid Conveyor:**
H. W. Caldwell & Son Co., Chicago.
- Hoists:**
Darling Bros., Montreal, P.Q.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Northern Crane Works, Limited, Walkerville, Ont.
- Insulating Varnishes:**
Spielman Agencies Regd., Montreal, Que.
- Iron Castings:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Iron Pulleys:**
H. W. Caldwell & Son Co., Chicago.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Jordan Engines:**
Jones, E. D. & Co., Pittsfield, Mass.
Noble & Wood Machine Co., Hoosick Falls, N.Y.
Process Engineers, Ltd., Montreal, Canada.
- Knives:**
Disston, H. & Sons, Ltd., Toronto, Ont.
Galt Knife Co., Ltd., Galt, Ont.
Hay, Peter, Knife Co., Galt, Ont.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Knives, Paper Cutting:**
Galt Knife Co., Ltd., Galt, Ont.
- Kollergangs:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited Lindsay, Ont.
- Lanterns, Electric:**
Spielman Agencies Regd., Montreal, Que.
- Locomotives:**
Canadian Equipment Co., Montreal.
Montreal Locomotive Works, Ltd., Montreal.
- Locomotives, Re-built:**
Sessenwein Bros., Montreal
Fraser, W., Montreal
- Paints:**
Brandram-Henderson Ltd., Montreal, Que.
Spielman Agencies, Montreal, Que.
- Paper Stock, Etc.:**
Pullan, E., 490 Adelaide Street W., Toronto, Canada.
- Paper and Pulp Machinery:**
Advance Engineering Co., Ltd., Toronto, Ont.
Beloit Iron Works, Beloit, Wis.
Bertram, James & Son, Ltd., Edinburgh, Scotland.
Bertrams, Ltd., Edinburgh, Scotland.
Black-Clawson Co., Hamilton, Ohio.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Boomer & Boschert Press Co., Ltd., Montreal, Canada.
Carthage Machine Co., Carthage, N.Y.
Downingtown Mfg. Co., East Downingtown, Pa.
Emerson Mfg. Co., Lawrence, Mass.
Farrel Foundry & Machine Co., Ansonia, Conn.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones, E. D. & Sons Co., Pittsfield, Mass.
Johnson, C. H. & Sons, Ltd., Montreal, Canada.
Marx, J. & Co., London, E.C., England.
Moore & White Co., Philadelphia, Pa.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Norwood Engineering Co., Cowansville, P.Q.
Process Engineers, Ltd., Montreal, P.Q.
Rice, Barton & Fales, Worcester, Mass.
Sandy Hill Iron & Brass Works, Hudson Falls, N.Y.
Scott, Ernest & Co., Fall River, Mass.
Sherbrooke Mach. Co., Ltd., Sherbrooke, Canada.
Smith, S. Morgan Co., York, Pa.
Stebbins Eng. & Mfg. Co., Watertown, N.Y.
Ticonderoga Machine Works, Ticonderoga, N.Y.
Voith, J. M., New York, N.Y.
Walmley, Chas. & Co., Bury, England.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.
- Paper Tester:**
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. E. Wilkin, Toronto, Ont.
- Penstocks:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Pillow Blocks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Piping—High Pressure:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Hydraulic:**
Canadian Kellogg Co. Ltd., New York.
- Piping—Power Plant:**
Canadian Kellogg Co. Ltd. New York.
- Piping—Welded:**
Canadian Kellogg Co. Ltd., New York
- Pneumatic Thickeners:**
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
- Presses:**
Boving Hydraulic & Engineering Co., Limited, Lindsay Ont.
Can. Boomer & Boschert Press Co., Montreal, Canada.
- Press Rolls:**
Bertrams, Ltd., Edinburgh, Scotland.
Process Engineers, Limited, Montreal, Canada
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Pulleys:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Pulp Stones:**
Lombard & Co., Boston, Mass.
Stancil Estate Co., Ltd., Darley Dale, England.
- Pumps:**
Advance Engineering Co., Ltd., Toronto, Ont.
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Darling Bros., Montreal, P.Q.
Glens Falls Machine Works, Glens Falls, N.Y.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Lawrence Machine Co., Lawrence, Mass.
Lawrence Pump & Engine Co., Lawrence, Mass.
McAvity T. & Sons, Ltd.
Smart-Turner Machine Co., Hamilton, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
The Waterous Engine Works Co., Limited, Brantford, Ont.
- Radial Brick:**
Canadian Kellogg Co. Ltd., New York.
- Railway Equipment—Scrap**
Sessenwein Bros., Montreal
- Rails—re-laying:**
Canadian Equipment Co., Montreal.
Fraser, W., Montreal.
Gartshore, J. J., Toronto
Sessenwein Bros., Montreal.
- Refiners:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Marx, J. & Co., London, E.C., England.
Process Engineers, Ltd., Montreal, Canada.
Rice, Barton & Fales Mach. & Iron Co., Worcester, Mass.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
- Reinforced Concrete:**
Canadian Kellogg Co. Ltd., New York.
- Rope, Cotton and Manila:**
Jones and Glassco, St. Nicholas Building, Montreal.
- Rope Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Waterous Engine Works Co., Limited, Brantford, Ont.
H. W. Caldwell & Son Co., Chicago.
- Rosin Size:**
Paper Makers Chemical Co., Easton, Pa.
Process Engineers, Ltd., Montreal, Canada.
Vera Chemical Co., North Milwaukee, Wis.
Wilson-Paterson Co., Board of Trade Bldg., Montreal, Canada
- Rosin Size Boilers and Dissolvers:**
Process Engineers, Ltd., Montreal, Canada.
- Rotary Sulphur Furnaces:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Canadian Pulp Mill Machinery Co., Montreal, Canada.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
- Safes:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Salt Cake:**
Kalbfleisch, Franklin & Co., New York.
- Save-Alls:**
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Waterous Engine Works Co., Ltd., Brantford, Canada
- Screen Plates:**
Bertrams, Ltd., Edinburgh, Scotland.
The Waterous Engine Works Co., Limited, Brantford, Canada.
- Screens:**
Bertrams, Ltd., Edinburgh, Scotland.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Glens Falls Machine Works, Glens Falls, N.Y.
The Jeffrey Mfg. Co., Montreal Que.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Johnson, Chas., St. Henry, Que.
Marx & Co., J., London, England.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machine Co., Ltd., Sherbrooke, Que.
Voith, J. M., New York, N.Y.
Waterous Engine Works Co., Ltd., Brantford, Canada.
Westbye, P. P., Peterboro, Canada.

MILL SUPPLIES---Continued

- Shafting:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Shredders:**
The Jeffrey Mfg. Co., Montreal Que.
- Slitters and Re-Winders:**
Bertrams, Ltd., Edinburgh, Scotland
Cameron Machine Co., Brooklyn, N.Y.
Moore & White Co., Philadelphia, Pa.
Ticonderoga Machine Works, Ticonderoga, N.Y.
- Smoke Stacks:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Soluble Blue:**
Brandram-Henderson Ltd., Montreal.
- Spiral Conveyor:**
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Split Pulleys—Wood and Steel:**
The Jeffrey Mfg. Co., Montreal Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sprockets:**
The Jeffrey Mfg. Co., Montreal, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Stacks:**
Canadian Kellogg Co. Ltd., New York.
- Steam Appliances:**
Canadian Equipment Co., Montreal.
Darling Bros., Montreal, Que.
- Steam Regulator:**
Pickles, W. F., Buckland, Conn.
- Steel Barrels:**
The Smart-Turner Machine Co., Hamilton, Ont.
- Steel Drums:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Smart-Turner Machine Co., Hamilton, Ont.
- Stokers—Mechanical:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
Penmans, Ltd., St. Hyacinthe, Canada.
- Strainers—Water:**
Babcock & Wilcox, Ltd., Montreal, P. Que.
- Straw Cutters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Straw Dusters:**
Bertrams, Ltd., Edinburgh, Scotland.
- Strawboard Making Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
- Structural Steel Works:**
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
- Stuff Chests:**
Jenckes Machine Co., Ltd., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Suction Couch:**
Process Engineers, Ltd., Montreal, Canada.
- Sulphite Mill Equipment:**
Advance Eng. Co., Toronto, Ont.
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphate of Alumina:**
Kalbfleisch, Franklin & Co., New York.
- Sulphate of Soda Calcined:**
Kalbfleisch, Franklin & Co., New York.
- Sulphate Mill Equipment:**
Carthage Machine Co., Carthage, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
Process Engineers, Ltd., Montreal, Canada.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Sulphur:**
Union Sulphur Co., 17 Battery Place, New York, N.Y.
- Sulphur Burners:**
Advance Engineering Co., Ltd., Toronto, Ont.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Stebbins Engineering and Manufacturing Co., Watertown, N.Y.
Watrous Engine Works Co., Ltd., Brantford, Ont.
- Superheaters—Steam:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Tanks:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Darling Bros., Montreal, P. Q.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Mackinnon, Holmes & Co., Ltd., Sherbrooke, Que.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Tanks—Welded:**
Canadian Kellogg Co. Ltd., New York.
- Transmission Machinery:**
Caldwell, H. W. & Son Co., Chicago, Ill.
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Jones & Glasco, Montreal, Canada.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Transmission Rope:**
Jones & Glasco, Co., Montreal, P. Que.
The Watrous Engine Works Co., Limited Brantford, Ont.
- Travelling Cranes:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Limited, Hamilton, Ont.
- Trolleys:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Smart-Turner Machine Co., Ltd., Hamilton, Ont.
Northern Crane Works, Walkerville, Ont.
- Tube Cleaners:**
Babcock & Wilcox, Ltd., Montreal, P. Q.
- Turbines:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Goldie & McCulloch Co., Ltd., Galt, Ont.
Smith, S. Morgan Co., York, Pa.
Voith, J. M. Co., Inc., New York, N.Y.
Voith, J. M., Wurttemberg, Germany.
- Valts and Valt Doors:**
Goldie & McCulloch Co., Ltd., Galt, Ont.
- Water Wheels:**
Boving Hydraulic & Engineering Co., Limited, Lindsay, Ont.
Jenckes Machine Co., Ltd., Sherbrooke, Que.
Smith, S. Morgan Co., York, Pa.
- Wire Cloth for Paper Machines:**
Christie, Geo., Ltd., Glasgow, Scotland.
Johnson, C. H. & Sons, Ltd., St. Henry, Montreal, Que.
Taylor, J. A., Montreal, Canada.
Westbye, P. P., Peterboro, Canada.
The Watrous Engine Works Co., Limited, Brantford, Ont.
- Waste:**
Hough, R., London, England.
- Wet Machines:**
Bertrams, Ltd., Edinburgh, Scotland.
Carthage Machine Co., Carthage, N.Y.
Glens Falls Machine Works, Glens Falls, N.Y.
Norwood Engineering Co. of Canada, Ltd., Cowansville, P.O.
Process Engineers, Ltd., Montreal, Canada.
Sherbrooke Machinery Co., Sherbrooke, Canada.
Voith, J. M., New York, N.Y.
Watrous Engine Works Co., Ltd., Brantford, Ont.

PULP AND PAPER MILL PRODUCTS

This aims to be a complete list of the products of Canadian Pulp and Paper Mills, who are urged to send us lists of brands and watermarks as well as the headings under which they wish to be indexed. Buyers who cannot meet their requirements from this list, are invited to communicate with the editor, who is in close touch with the mills, and will gladly furnish full information.

PULP MILLS

Ground Wood Pulp:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Brompton Pulp & Paper Co., Brompton and E. Angus, Que.
Booth, J. R. Ottawa, Ont.
Bronson Co., Ltd., Ottawa, Ont.
Campbell Lumber Co., Weymouth, N.S.
Canada Paper Co., Ltd., Montreal, Que.
Chicoutimi Pulp Co., Chicoutimi, Que.
Davy, James, Thorold, Ont.
Eddy Co., The E. B., Ltd., Hull, Que.
Foley-Rieger Pulp & Paper Co., Ltd., Thorold, Ont.
Ford, J. & Co., Port Neuf, Que.
Jacques-Cartier Pulp & Paper Co., Montreal.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Lake Megantic Pulp Co., Lake Megantic, Que.
Laurentide Co., Ltd., Grand Mere, Que.
MacLaren Co., Ltd., The James, Buckingham, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Nicolet Falls Pulp & Lumber Co., Nicolet Falls, Que.
North Shore Power, Railway & Navigation Co., Clarke City.
Northumberland Pulp Co., Campbellford, Ont.
Ontario Paper Company, Thorold, Ont.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Price-Porritt Pulp & Paper Co., Rimouski, Que.
Reed, A. E. & Co. (Nfld.), Ltd., Bishop's Falls, Nfld.
River-du-Loup Pulp Co., Ltd., Fraserville, Que.

Soucy, F. Florentine, Old Lake Road, Que.
Spanish River Pulp and Paper Mills, Ltd., Sault Ste. Marie, O. t.
Union Bag & Paper Co., Cape Madeleine, Que.
Wilson, J. C., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., E. Angus, Que.
Dryden Timber and Power Co., Dryden, Ont.
Brown Corporation, La Tuque, Que.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Soda Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Sulphite Fibre:

Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Bathurst Lumber Co., Limited, Bathurst, N.B.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Booth, J. R., Ottawa, Ont.
Donnacona Pulp & Paper Co., Donnacona, Que.
Edward Partington Pulp & Paper Co., Ltd., St. John, N.B.
Eddy Co., The E. B., Ltd., Hull, Que.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Ont.
Spanish River Pulp & Paper Mills, Ltd., Sault Ste. Marie, Ont.
Toronto Paper Mfg. Co., Ltd., Cornwall, Ont.

Dominion Timber Regulations

Licenses to cut timber on Dominion Lands in the Provinces of Manitoba, Saskatchewan and Alberta, the Northwest Territories, within twenty miles on either side of the main line of the Canadian Pacific Railway in the Province of British Columbia, and in the tract of three and one-half million acres located by the Government of the Dominion in the Peace River district in the Province of British Columbia, lying east of the Rocky Mountains and adjoining the Province of Alberta, shall be disposed of by public auction at the office of the Dominion Timber Agent for the district in which the berths are situated.

Before any parcel of timber is offered for sale it shall be surveyed by a duly qualified Dominion Land Surveyor into berths of an area not exceeding twenty-five square miles, and each of such berths shall then be thoroughly cruised by a duly qualified timber cruiser in the employ of the Dominion Government. The Minister shall then fix an upset price at which the berth shall be disposed of, and no berth shall be sold at less than the price so fixed.

Purchases to the amount of one thousand dollars or under shall be paid in cash at the time of sale. Purchases over one thousand dollars and not exceeding five thousand dollars shall be paid, one-half in cash at the time of sale, and a note or notes shall be given for the remaining half of the purchase price, payable in three months, with interest at the rate of five per cent per annum. Purchases over five thousand dollars and not exceeding ten thousand dollars shall be paid one-third in cash at the time of sale, and notes shall be given for the remaining two-thirds of the purchase price, payable in three and six months, with interest at the rate of five per cent per annum. Purchases exceeding ten thousand dollars shall be paid one-fourth in cash at the time of sale, and notes shall be given for the remaining three-fourths of the purchase price, payable in three, six and nine months, with interest at the rate of five per cent per annum. Notes shall be made payable at a bank in the city or town in which the sale is held or at a bank in the city of Ottawa. Cash payments must be made at the time of sale in legal tender or by an accepted cheque on a chartered bank, or by a draft issued by a chartered bank, payable to the order of the Deputy Minister of the Interior. If default is made in any payment required by this section the sale shall be forfeited and void.

The purchaser must also pay the cost or the estimated cost of the survey of the berth before a license is issued.

The licensee shall pay an annual ground rent of five dollars per square mile except for land situated to the west of Yale, in the Province of British Columbia, in which case the yearly ground rent shall be five cents per acre.

The licensee shall pay the following dues on timber cut on his berth:—

Sawn lumber, 50 cents per thousand feet board measure.

Lath, 15 cents per thousand.

Shingles, 15 cents per thousand.

Piling and cribbing, $\frac{1}{2}$ cent per lineal foot.

Railway ties, 8 feet long, $1\frac{1}{2}$ cents.

Railway ties, each lineal foot over 8 feet long, $\frac{1}{4}$ cent.

Shingle bolts, cut within the Railway Belt of British Columbia, 25 cents per cord.

Cordwood, 15 cents per cord.

And 5 per cent on the sale of all other products of the berth.

Timber Permits

Yearly permits are granted to settlers, mine operators and others on application to the Dominion Timber Agents, from whom further information can be obtained.

W. W. CORY

Deputy Minister.

Department of the Interior, Ottawa,
September 2, 1915.

PAPER MILLS---Continued

Bristo .

Don Valley Paper Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.
Canada Paper Co., Montreal and Toronto.

Building and Sheathing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
British Columbia Sulphite Fibre Co., Ltd., Vancouver, B.C.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Portneuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper and Electric Co., Ltd., Campbellford, Ont.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Ford, R. & Son, Port Neuf, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Strathcona Paper Co., Strathcona, Ont.
McArthur, Alex. & Co., Montreal, Que.
McLeod Pulp Co., Ltd., Liverpool, N.S.
Walker, J. R. & Co., Montreal, Que.

Cardboard Specials:

Don Valley Paper Co., Ltd., Toronto, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.
Jonquiere Pulp Co., Jonquiere, Que.
MacLeod Pulp Co., Ltd., Liverpool, N.S.
Canada Paper Co., Windsor Mills, Que.
Booth, J. R., Ottawa, Ont.
Eddy, E. B. Co., Ltd., Hull, Que.
Laurentide Co., Ltd., Canada Life Building, Montreal, Que.

Carpet Lining:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford, Ont.
Western Paper Mills, Ltd., Vancouver, B.C.

Coated:

Ritchie & Ramsay, Toronto, Ont.
Georgetown Coating Mills, Ltd., Georgetown, Ont.
National Paper Co., Valleyfield, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.

Corrugated Paper:

Lazier Paper Mills, Ltd., Belleville, Ont.
Hinde & Dauch Paper Co., Ltd., Toronto, Ont.

Cover:

Canada Paper Co., Ltd., Montreal and Toronto.
Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Ritchie & Ramsay, Toronto, Ont.

Envelope:

Don Valley Paper Co., Ltd., Toronto, Ont.
Kinleith Paper Co., Ltd., St. Catharines, Ont.
Provincial Paper Mills Co., Ltd., Toronto, Ont.
Toronto Paper Mfg. Co., Cornwall, Ont.

Felts:

Bird, F. W. & Sons, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
McArthur, A. & Co., Montreal, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, R. & Son, Port Neuf Station, Que.
Montreal Paper Co., St. Basile, Que.
Northumberland Paper & Electric Co., Ltd., Campbellford.
Western Paper Mills Ltd., Vancouver, B.C.

Fibre:

Canada Paper Co., Ltd., Montreal and Toronto.
Dominion Paper Co., Montreal, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp and Paper Co., Merritton, Ont.
Strathcona Paper Co., Strathcona, Ont.
Wilson, Ltd., J. C., Montreal, Que.

Fibre Board Boxes:

Hinde and Dauch Paper Co of Canada, Toronto.

Flour Sacks:

Eddy Co., The E. B., Ltd., Hull, Que.
Lincoln Paper Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

Glazed:

Provincial Paper Mills Co., Ltd., Toronto, Ont.

Gummed Paper Manufacturers:

Gumme! Papers Ltd., Brampton, Ont.

Hanging:

Ford, J. & Co., Portneuf Station, Que.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, Alex. & Co., Montreal, Que.
Riordon Pulp & Paper Co., Ltd., Montreal, Que.

Kraft:

Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Dominion Paper Co., Montreal, Que.
Dryden Timber and Power Co., Ltd., Dryden, Ont.
Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que.

Leather Friction Board:

Walker, J. R. & Co., Montreal, Que.

News:

Abitibi Power & Paper Company, Montreal, Que.
Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.
Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que.
Booth, J. R. Ottawa, Ont.
Canada Paper Co., Ltd., Montreal and Toronto, "Canada Brand."
Crabtree and Son, Edwin, Crabtree Mills, Quebec.
Donnacona Pulp and Paper Co., Donnacona, Que.
Eddy Co., The E. B. Co., Ltd., Hull, Que.
Ford, J. & Co., Portneuf Station, Que.
Fort Frances Pulp & Paper Co., Ltd., Fort Frances, Ont.
Laurentide Co., Ltd., Grand Mere, Que.
News Pulp & Paper Co., Ltd., St. Raymond, Que.
Powell River Co., Ltd., Powell River, B.C.
Price Bros. & Co., Ltd., Kenogami, Que.
Riordon Pulp and Paper Co., Ltd., Montreal, Que.
Spanish River Pulp & Paper Mills, Ltd., Toronto, Ont.
Ontario Paper Co., Thorold, Ont.

Roofing:

Bird, F. W. & Son, Hamilton, Ont., and Pont Rouge, Que.
Eastern Paper Co., Ltd., St. Basile, Que.
Ford, Joseph & Co., Port Neuf, Que.
Ford, Rowland & Son, Port Neuf, Que.
Montreal Paper Co., St. Basile, Que.
Walker, J. R. & Co., 35 Common, Montreal, Que.
Western Paper Mills, Ltd., Vancouver, B.C.

Straw Board:

Eastern Paper Co., Ltd., St. Basile, Que.
Ford, J. & Co., Port Neuf, Que.
Lazier Paper Mills, Ltd., Belleville, Ont.
Lincoln Paper Mills Co., Ltd., Merritton, Ont.
McArthur, A. & Co., Montreal, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
Trent River Paper Co., Ltd., Frankford, Ont.
Trent Valley Paper Mills, Glenmillar, Ont.

Tag:

Don Valley Paper Co., Ltd., Toronto, Ont.
Eddy, The E. B. Co., Ltd., Hull, Que.
J. R. Booth, Ottawa, Ont.

Tissue and Toilet:

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Garden City Paper Mills, Ltd., St. Catharines, Ont.
Interlake Tissue Mills, Ltd., Merritton, Ont.
Wilson, J. C., Ltd., 61 St. Alexander Street, Montreal, Que.

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Beaver Co., Ltd., Beaverdale, Que.
Bishoprick Wallboard Co., Ottawa, Ont.
Hinde & Dauch Paper Co. of Canada, Toronto, Ont.

Wood Board:

Beaver Co., Ltd., Thorold, Ont.
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Brompton Pulp & Paper Co., Ltd., East Angus, Que.
Canada Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Northumberland Paper & Electric Co., Campbellford, Ont.
McLeod Pulp Co., Liverpool, N.S.
Western Paper Mills, Ltd., Vancouver, B.C.

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Canada Paper Co., Ltd., Montreal, and Toronto.
Dominion Paper Co., Montreal, Que.
Eddy Co., The E. B., Ltd., Hull, Que.
Ford, J. & Co., Port Neuf, Que.
Ford, Rowland, Port Neuf, Que.
Gore Valley Paper Mills, Dundas, Ont.
Jonquiere Pulp Co., Ltd., Jonquiere, Que.
Laurentide Co., Ltd., Grand Mere, Que.
Canada Paper Co., Montreal and Toronto.
Wilson, J. C., Ltd., Montreal, Que.
[See also Kraft].

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Howard Smith Paper Mills, Ltd., Beauharnois, Que.
Kinleith Paper Co., St. Catharines, Ont.
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Toronto Paper Manufacturing Co., Cornwall, Ont.

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Wilson, Ltd., J. C., 61 St. Alexander Street, Montreal, Que.

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McArthur, Alex & Co., Montreal, Que.

Blotting:

Canada Paper Co., Montreal.

Bone:

Canada Paper Co., Ltd., Montreal, Que.
Howard Smith Paper Mills, Ltd., Montreal & Beauharnois, Que.

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Alphabetical List of Advertisers

See Classified List on Page 51

Unpaged Advertisements appear in every other issue

A

Albertson, D. J.....	64
Ambursen Hydraulic Construction Co., Ltd.....	11
American Newspaper Publishers Association	3
Ayers, Ltd.....	68

B

Babcock & Wilcox, Ltd.....	65
Bates & Innes.....	68
Barker, E. R.....	64
Becker & Co.....	67
Beloit Iron Works.....	14
Bertram, James & Son, Ltd.....	10
Bertrams, Ltd.....	2
Beveridge Paper Co Ltd.....	
Beveridge, Jas., Chatham, N. B.....	62
Black-Clawson Co.....	63
Boving Hydraulic & Engineering Co. Limited.....	6
Bowater, W. V. & Sons, Ltd.....	8
Brandram-Henderson Ltd.....	45
The Bronson Company.....	

C

Caldwell, H. W. & Son, Co.....	18
Cameron Machine Co.....	65
Canadian Boomer and Boschert Press Co.....	418
Canadian Fairbanks-Morse Co., Ltd.....	69
Canadian Kellogg Company.....	7
Canada Paper Co., Limited.....	66
Canadian Westinghouse Co., Ltd.....	
Capital Wire Cloth Mfg. Co., Ltd.....	60
Carthage Machine Co.....	10
Chambers, Ltd.....	2
Chicoutimi Pulp Co.....	67
China Clay Co.....	
Christie George, Ltd.....	62
Churchill & Sim.....	
Claflin Engineering Co.....	
Crossley, T. L.....	65

D

Darling Bros., Ltd.....	
DeCew, J. A.....	64
Dean & Son.....	8
Dept. Lands, Forests, Mines.....	416
Disston, H. & Sons, Ltd.....	6
Dominion Belting Co.....	65
Dominion Pulp Woods' Limits.....	54
Downington Mfg. Co.....	16
Dunlop Tire & Rubber Goods Co., Ltd.....	

E

Eaton & Brownell.....	64
The E. B. Eddy Co., Ltd.....	66
Emerson Mfg. Co.....	9

F

Farrel Foundry & Machine Co.....	11
Ferguson, H. S.....	64
J. Ford & Company.....	
Fraser, W.....	

G

Galt Knife Co., Limited.....	63
Gartshore, Jno. J.....	65
Glens Falls Machine Works.....	
Goldie and McCulloch Co., Limited.....	

H

Hardy, Geo. F.....	64
Hay Knife Co., Peter, Ltd.....	
Hersey, Milton Co.....	65
Hooker Electrochemical Co.....	65
Huestis, A. M.....	61
Huyck, F. C., Sons.....	12

J

Jeffrey Mfg. Co.....	13
Jenssen, G. D. & Co.....	64
Jenckes Machine Co.....	14
Johnson & Sons, Ltd., C. H.....	18
Johnson, Chas.....	4
Jones, E. D. & Sons, Co.....	17
Jones & Glassco.....	6

K

Kalbfleisch Co.....	61
Kimball H. S.....	4
Klipstein, A. & Co., Ltd.....	7

L

L'air Liquide Société.....	61
Lawrence Machine Co.....	9
Laurentide Co., Ltd.....	63
Little, Arthur D., Inc.....	65
Lombard & Co.....	6

M

Mackinnon, Holmes & Co.....	
Main Belting Co. of Canada Ltd.....	
Mann & Cook.....	63
Marx, J. & Co.....	65
T. McAvity & Sons, Ltd.....	13
Meincke, G. A. & Co.....	62
Montreal Locomotive Works, Ltd.....	14
Moore & White Co.....	15

N

Noble & Wood Machine Co.....	61
Northern Crane Works, Ltd.....	
Norwood Engineering Co. of Can. Ltd.....	13

O

Ontario Pulp Wood Limits.....	56
Ottawa Car Mfg. Co., Ltd.....	9

P

Panzl Digester Lining Co.....	7
Paper Makers Chemical Co.....	64
Parsons Trading Co.....	18
Penmans, Limited.....	15
Pickles, W. F.....	68
Prather, H. B.....	64
Process Engineers, Ltd.....	65
Provincial Paper Mills Co., Ltd.....	59
Pullan, E.....	65
Pulp & Paper Trading Co.....	

R

Relph, Darwen & Pearce.....	
Rice, Barton & Fales Machine & Iron Co.....	16
Riordon Pulp & Paper Co., Ltd.....	66
Rolland Paper Co., Ltd.....	66
Rushworth, Wm. A.....	8

S

Sadler and Haworth.....	400
Sandy Hill Iron & Brass Works.....	17
Schlick, Leo.....	64
Sewall, Jas. W.....	65
Scott, Ernest & Co.....	62
Sessenwein Bros.....	65
Sherbrooke Machinery Co., Ltd.....	5
Smart-Turner Machine Co.....	68
Spielmann Agencies.....	417
Stancliffe Estates Co., Ltd.....	68
Stebbins Engineering & Mfg. Co.....	64

T

Taylor, J. A.....	62
Ticonderoga Machine Works.....	

U

Union Screen Plate Co. of Canada, Ltd.....	
Union Sulphur Co.....	18

V

Vera Chemical Co. of Canada, Ltd.....	6
Voith, J. M.....	12

W

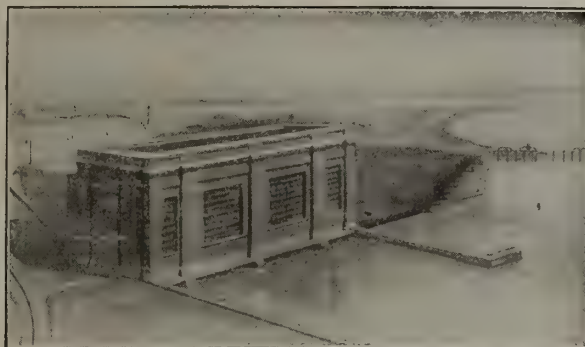
Wallace, Jos. H. & Co.....	64
Walmsley, Charles & Co., Ltd.....	4
Waterous Engine Works Co., Ltd.....	8
Westbye, P. P.....	
Wilson-Peterson Co.....	



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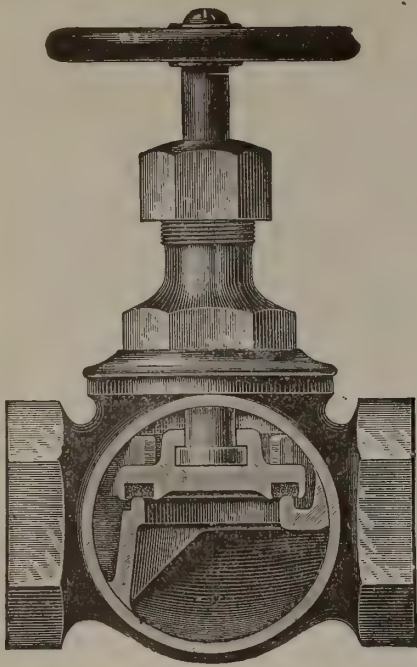


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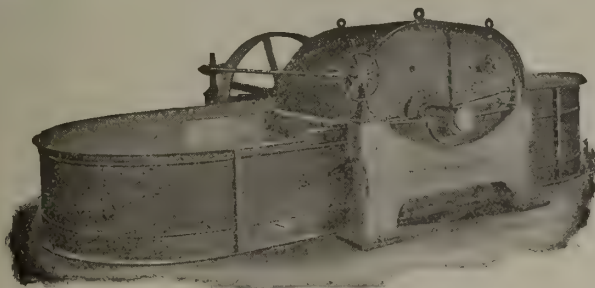
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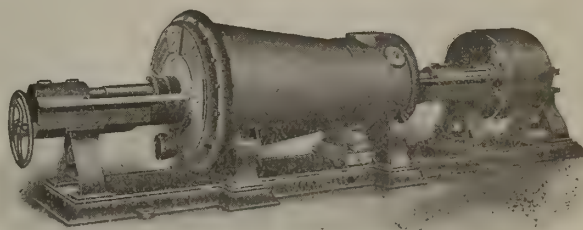
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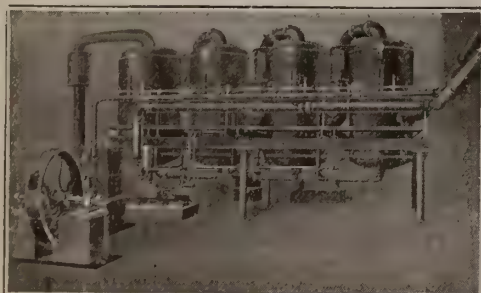
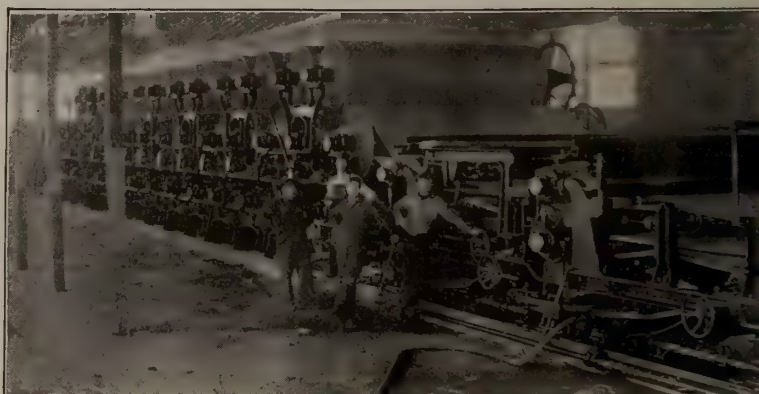
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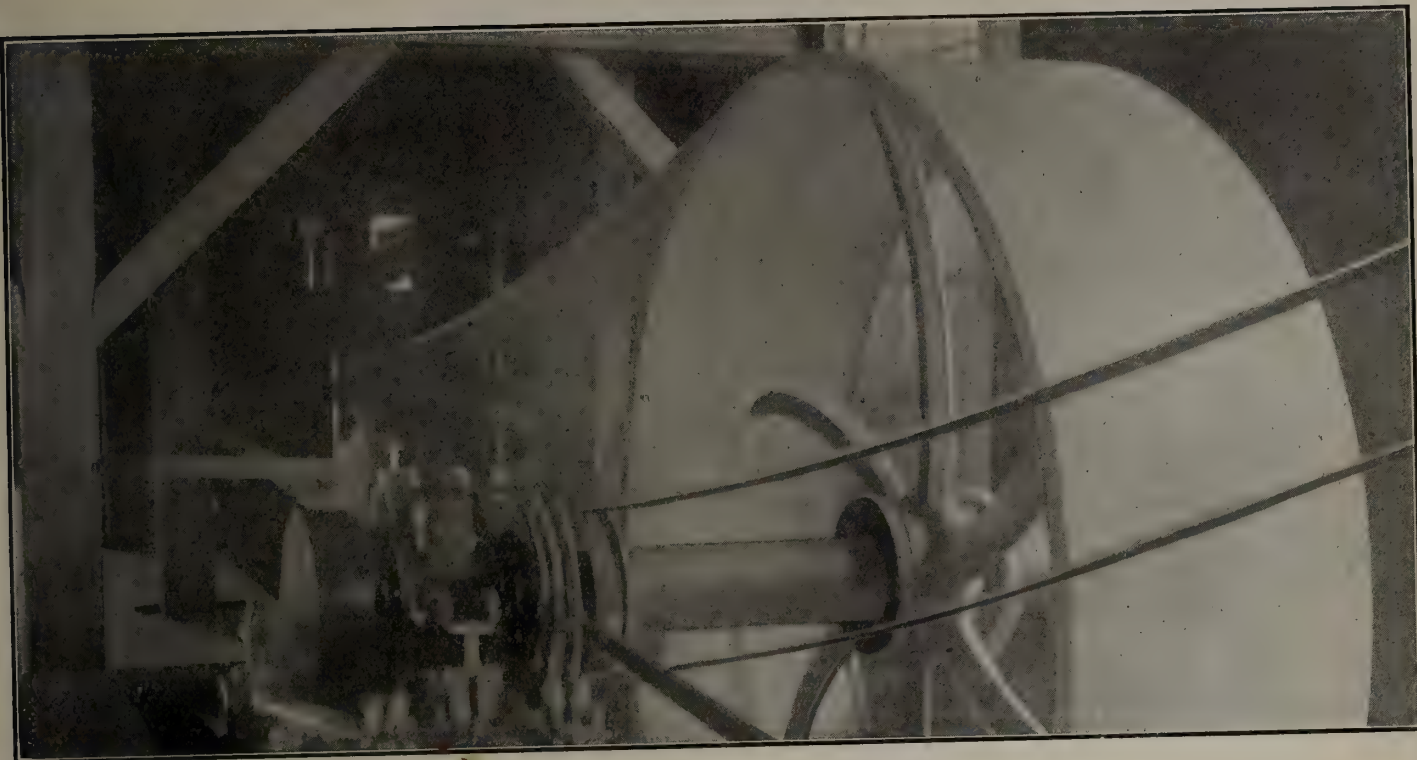
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